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ELECTRIC RAILWAY TRACTION

A Supplement illustrating and describing developments in Electric Railway Traction is presented with each copy of this week's issue.

The Prince States the Problem

SCARCELY have the clouds of industrial depression over these islands lifted a little than those of industrial strife show themselves—as yet no smaller than a man's hand—upon the horizon. The various organisations of railwaymen, observing the promise of the restoration of wage cuts to civil servants, are beginning to clamour for a restoration of railwaymen's cuts, despite the critical factor that whereas the Government has shown an available surplus, the income of the railways so far would not justify such a step. And so the trouble goes on along the years—wars and rumours of wars, at home and abroad—an irregular curve of peaks and hollows, but always with an ascending tendency, directly proportional to the ascending curve of industrial productive capacity, instead of inversely proportional to it as, in a reasonably ordered world, it would be. We welcome the authority of the Prince of Wales in support of our oft-reiterated emphasis that this paradox must be solved; at the annual dinner of the London Chamber of Commerce last Tuesday His Royal Highness said: "There is no scarcity of commodities. It is, I feel, at the consumption and distribution ends that failure has occurred. It is useless to produce goods that cannot be sold, and *it is the concern of the business community to discover a way out of the present impasse.*" Ours are the justifiable italics.

Railway Service Appreciated

There is still a school of public thought which regards the railway as the least approachable of public services. Such obsessions die hard, but threats to their longevity are daily growing more numerous. A striking testimonial to the readiness of the railways to accommodate themselves to individual requirements appeared recently in *The Manchester Guardian*, where a writer paid tribute to the comprehensive arrangements made by the L.M.S.R. for the convenience of the rambling club for the blind in Manchester. Reserved coaches have been provided on several occasions for the outings of this organisation in the Pennines and Cheshire, this facility often involving the haulage of empty stock over considerable distances and the working of vehicles to and from remote points on other companies' systems. The helpful attitude of the railway companies to walking clubs in general was also commented upon. It is encouraging to see that not only was the action of the L.M.S.R. generously appreciated in this instance but that the traffic problems involved were recognised. When such enlightenment becomes general, the number of unreasonable demands upon the railways will be minimised and those to which the companies can accede will be increased, to the profit of all parties.

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The Week's Traffics

Traffics of the four group companies for the past week include the Whitsuntide Bank Holiday receipts and compare with those of a normal week in 1933, so that passenger train earnings are substantially up in every case, and goods and coal are down owing to the loss of a working day. Comparing the passenger train traffics for the Whitsuntide holiday fortnights of 1934 and 1933 it will be found that in 1934 there were decreases on all four lines, the respective decreases being £69,000 on the L.M.S.R., £56,000 on the L.N.E.R., £44,000 on the Great Western, and £46,000 on the Southern. The lower temperatures prevailing during the 1934 holiday and the fact that it was a fortnight earlier may largely account for these differences.

	21st Week				Inc. or dec.	
	Pass. &c.	Goods, &c.	Coal, &c.	Total.	Year to date	
	£	£	£	£	£	%
L.M.S.R. ..	+ 78,000	– 58,000	– 48,000	– 28,000	+ 1,301,000	+ 5·99
L.N.E.R. ..	+ 53,000	– 6,000	– 31,000	+ 16,000	+ 1,355,000	+ 8·62
G.W.R. ..	+ 17,000	– 33,000	– 26,000	– 42,000	+ 362,000	+ 3·98
S.R. ..	+ 35,000	– 6,000	– 4,000	+ 25,000	+ 256,000	+ 3·63

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The German Summer Speed-up

Examination of the summer time-tables of the German State Railway proves that the acceleration of train services, to which brief reference was made in the April 6 issue of THE RAILWAY GAZETTE, has been almost meteoric in character. On page 982 of this issue details of the principal high speed services are given, from which it will be seen that, whereas in 1931 the first 58 m.p.h. booking—of a modest length of 30 miles—had just appeared in the German time-tables, this summer, only three years later, no less than 5,337 miles are so scheduled, made up of 62 different runs. The Flying Hamburger railcar still heads the list with its bookings of 77·4 m.p.h. in one direction and 76·3 m.p.h. in the other; but it is now joined by six other journeys of steam trains booked at speeds of over 65 m.p.h. from start to stop, and totalling in length 1,231 miles. In certain cases the same express is booked to make two start-to-stop journeys in succession at speeds of over 60 m.p.h.; while a large proportion of the short runs made by ordinary "D" class express trains over various routes are timed from point to point at upwards of 55 m.p.h., often for a number of point-to-point stages in succession. As we pointed out in the April 6 issue also, this is but a beginning; for on the widespread

introduction of railcar services in Germany next year 70 m.p.h. rail schedules will become almost a commonplace.

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Overseas Railway Traffics

By an increase of £34,000 in its traffics for the past fortnight the Buenos Ayres & Pacific has reduced its decrease for the year to date to £1,000. Central Argentine traffics during the same period have improved to the extent of £62,000, thus bringing the decrease for the 47 weeks well below the £600,000 figure. Buenos Ayres Great Southern traffics have on the other hand fallen away £43,000 in the two weeks, and the Buenos Ayres Western's increase of £8,000 a fortnight ago has now been turned into a decrease of £8,000. Canadian Pacific net earnings for the period January 1 to April 30 show an improvement of £532,200.

Railway.	No. of Week.	Weekly Traffics.	Increase or Decrease.	Aggregate Traffic.	Increase or Decrease.
		£	£	£	£
Buenos Ayres & Pacific	47th	129,000	+ 23,000	5,241,000	— 1,000
Buenos Ayres Great Southern ..	47th	168,000	— 20,000	9,486,000	— 161,000
Buenos Ayres Western	47th	64,000	— 6,000	3,209,000	— 8,000
Central Argentine	47th	193,000	+ 41,000	7,923,000	— 576,000
Canadian Pacific	20th	471,200	+ 83,200	8,781,200	+1,286,800
Bombay, Baroda & Central India	7th	182,700	+ 11,925	1,181,100	+ 9,975

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An Excursion Development

It is doubtful whether the most enthusiastic advocates of excursion travel in its infancy foresaw the day when the cheap-fare train would attain to the dignity of a column in the time-table. That it has done so now is less surprising than it would have been even a year ago, for the extension of " summer " tickets has made every passenger, undertaking anything longer than a local journey, an excursionist in one sense of the word. Cheap half-day bookings by regular expresses are a further sign of the times, but the spectacle most symptomatic of this revolutionary age is that of the established excursion throwing open its doors to the ordinary passenger. This development chiefly affects Sunday services, and, as there is no doubt that a fair proportion of passengers on that day have chosen it with the object of avoiding crowds, the popularity of the move with the public is open to debate. At terminal stations it may be possible to arrange for full-fare paying passengers to have the first choice of seats by admitting them to the platform before the excursionists, but this does not solve the problem for those joining the train *en route*. A note in the time-tables to warn passengers of what are actually excursion services might be useful in minimising dismay.

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Railway Militarism

To the railway traveller entering Italy, one of the first unmistakable evidences of the Fascist régime, directly the frontier has been crossed, is the appearance in his train of members of the *milizia ferroviaria*, or railway militia. Every train carries one or two of these militiamen, in greenish-grey uniforms somewhat resembling those of the Alpine troops, and the rule that they exercise over the passengers is strict indeed, as any experiment say, in thoughtlessly resting a pair of feet on the opposite seat will soon prove to the experimenter. But in recollection of past travel conditions in Italy, one readily forgives any such control in the enjoyment of the cleanliness and efficiency of present-day Italian railway operation. Not only are the trains thus manned by the militia, but all important signal boxes and goods sheds are similarly guarded by armed men. So far as the yards are concerned, the duties of these blackshirts correspond somewhat to those of railway police, but the cost in peace time of such additions to the staff at stations and in the trains must be considerable. There are about 12,000 men in all fourteen legions of the *milizia ferroviaria*, one legion to a province; thus the first legion is in Piedmont, the second in Lombardy, and so on, with the thirteenth in the Island of Sardinia and the fourteenth in Sicily.

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Wagons-Lits Results

Gross receipts of the Compagnie Internationale des Wagons-Lits et des Grands Express Européens for the year 1933 were slightly better than those for 1932 in spite of exchange difficulties, and the profit on working was some 10,000,000 Belgian francs better owing to further economies which have placed the company in a stronger position to deal with any increase of traffics. The railway administrations concerned have continued their assistance in modifying the working agreements with the company. Financial results for the past two years are compared in the following table, the present rate of exchange being about 110 Belgian francs to the £1:—

	1933 Belgian francs	1932 Belgian francs
Profit on working	72,038,300	62,796,658
Sundry credits, including profit on redemption of sterling issues ..	31,294,746	87,737,442
Total income	103,333,046	150,534,100
Interest, depreciation, &c.	65,359,520	72,482,203
Balance	37,973,526	78,051,897
Brought forward	281,113	229,216
Rolling stock amortisation	38,000,000	78,000,000
Carried forward	254,639	281,113

As in the previous three years the ordinary shares receive no dividend. No new rolling-stock was brought into service during the year, and 36 vehicles were scrapped. The stock now comprises 2,242 vehicles.

* * * *

International Sleeping Car Developments

Further progress in the provision of third class sleeping cars is recorded in the report of the Wagons-Lits Company for the year 1933. Third class wagons-lits were placed in service between Paris and Nice in April, 1933, and since then they have been provided between Paris-St. Gervais, Paris-Innsbrück, and Paris-Interlaken and between Brussels and Basel. More wagons-restaurant-bars and buffet cars are being added in consequence of their popularity with the travelling public. There have been accelerations of many important international trains, and that of the Rome Express in particular has caused a considerable development in traffic to and from Italy. Accelerations of the Simplon—Orient and the Taurus expresses combined with new road-motor connections have now brought Baghdad within 5½ days of Paris, and have also improved the communications with Persia. The company's contract with the Swiss Federal Railways has been renewed for fifteen years, and the arrangement with the Lithuanian Railways has also been continued.

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Mitropa Results for 1933

The seventeenth report of the Mitropa (Mitteleuropaische Schlafwagen und Speisewagen A.G.) for the year ended November 30, 1933, shows that receipts fell by about a million marks compared with the previous year, but this was a decidedly better situation than in 1932, when the decline was about nine times as great. The fall in the traffic led to the withdrawal of some cars from service, there being 179 sleeping cars running daily instead of 190 in 1932, and 212 restaurant cars as against 220. The car kilometres run amounted to 82,900,000, a reduction of 1,100,000. In order to assist industry orders for new cars

were placed during the year, and should the traffic improve, as it shows signs of doing, further orders will be placed. Members of the staff engaged for the summer services have been kept on during the winter months and they have agreed, to assist matters, to take holidays without pay, varying from 10 to 20 days. A subsidiary company, which controls the refreshment rooms at Frankfort-on-Main has been able to meet all its charges during the year. Sums owing to banks have been reduced from 2,510,031 to 268,100 marks and there is an amount available to set against that of 334,947 marks. Gross receipts from ordinary sources were 25,413,208 and from other sources 1,723,657 marks. Wages and salaries took 9,669,539 and running expenses 13,953,702 marks. National insurance payments came to 658,146 marks and taxes to 430,789 marks. From March, 1933, compared with the previous year, an appreciable improvement in traffic has been noticeable, and the company will probably be able to present better figures when the present financial year closes.

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Antofagasta (Chili) & Bolivia Railway

A general improvement in conditions during the year 1933 was reflected in increased traffics in many of the commodities carried, and railway gross receipts improved by 14·77 per cent. Notwithstanding the greater volume of traffic working expenses were reduced 9·87 per cent., the operating ratio being 67·49 per cent., compared with 85·95 per cent. for 1932. The decrease in expenses is mainly attributable to the economic measures put into force in the previous year and to further efforts to reduce expenditure. A further contributory cause was the fall in exchange in relation to expenditure in currency. Financial results for the past two years are compared in the accompanying table:—

	1933	1932
	£	£
Railway gross receipts	552,332	481,247
Railway working expenses	372,780	413,622
Railway net receipts	179,552	67,625
Total income	626,905	485,898
Debenture interest, exchange differences, &c.	278,212	241,145
Renewals and exchange reserve ..	108,000	—
Carried forward	240,693	244,753

Passenger receipts improved, largely on account of the transport of troops in Bolivia. The quantity of nitrate despatched to the coast was 102,934 tons, compared with 26,969 for 1932. There was also an increase of 24·12 per cent. in the up goods traffic on the Chilean section. During the year the Stores Superintendent and his bookkeeping staff were moved to Antofagasta, where all materials are retained other than those for the locomotive department, which are concentrated in Mejillones.

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Accidents on Electrified Sections in Germany

Our contemporary, *Der Eisenbahnfachmann*, publishes an interesting table giving particulars of the accidents to railway staff and other persons on the electrified sections of the Reichsbahn last year. The length of electrified railway was then about 1,890 km., and 32 persons met with fatal or other accidents. Excluding two suicides, there were 8 fatal cases, 4 cases of serious injury and 18 of lesser gravity. Of the fatal cases, all but one were on the sections equipped with the high-tension single phase system, the exception being on the Berlin local lines, where the 800-volt protected third rail is used. The majority of the accidents was due to thoughtlessness—in some instances to gross carelessness. For example, a workman employed by a private firm, disobeying express instructions, ascended the overhead structure before the current had been cut off and came in contact with the 15,000-volt circuit. Another workman, on the approach of a train, himself removed the earthing bar connecting the contact wire with the structure, and received a severe shock. Of the years 1927 to 1932, both inclusive, 1932 showed the best all round record, with 1·5 accidents per 100 kilometres of route, and 1927 was much the worst for fatal accidents, with 1·8 persons killed per 100 km. electrically operated. The Reichsbahn is doing its best to improve matters by a well-organised Safety First campaign.

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Roaring Rails

In our issue of March 23 last we discussed editorially one reason advanced for the formation of corrugations in railheads, producing what are generally known as roaring rails. This discussion has led Mr. H. K. Koregaokar, B.Sc., Assoc.M.Inst.C.E., of the Eastern Bengal Railway, to call our attention to an experiment intended to lay the ghost of another supposed cause, namely, brick ballast, commonly believed in countries where it is used to be conducive to roaring. Apparently, in a section of line containing intermittent roaring rails, the brick ballast was entirely removed throughout lengths of about 150 yd. and replaced by (*a*) trap stone, (*b*) ash ballast and (*c*) sand. At the same time, the corrugated rails in those lengths were replaced by smooth ones. After a considerable period of time it was found that the roaring was worse than ever in these particular lengths and that the newly-formed corrugations were closer together than those over the brick ballast adjacent. Mr. Koregaokar also points out that it has been observed that when a smooth rail is placed between two corrugated ones, it, too, soon becomes corrugated, and to this fact he attributes the continually increasing roaring on the Dacca section of the E.B. Railway to which we previously alluded. There is no doubt that once roaring conditions are set up, the whole permanent way—rails, fittings, sleepers and ballast—all vibrate perceptibly and the vibrations could, therefore, hardly be expected to take place in one rail-length and not in the next, at any rate to some extent.

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Locomotive Lubrication

Interest in the subject of lubrication has increased with the development of locomotive proportions and the more intensive service which the engines are called upon to perform. Grease lubrication is now receiving special attention, and in a paper read by Mr. H. P. Renwick before the fifth annual general meeting of the Indian and Eastern Centre of the Institution of Locomotive Engineers, the matter was fully discussed. Mr. Renwick said he regarded the lubrication of engine details by oil as unreliable in intensive service and after much experience had formed the opinion that the reliability of grease is considerably greater. A grease lubricated bearing will also stand up to greater abuse and show less wear than one lubricated by oil. The author demonstrated that grease lubrication has the advantage in running shed work of reducing the man-hours spent on big ends and side rods. Comparative tests with three grease lubricated engines over 10,000 miles had shown considerable economies in their favour. Perhaps the greatest advantage of all is that an engine with grease lubrication can be serviced at the running shed and sent out on a round trip of 1,000 or more miles with full confidence that it will need no further attention to lubrication on the part of the driver than the refilling of the lubricator and the oiling of the axleboxes.

Mr. Gresley's New Express Engine

ON page 880 of our issue dated May 18 there appeared a brief illustrated reference to the new three-cylinder 2-8-2 type locomotive No. 2001 recently completed at the Doncaster works of the L.N.E.R., and this is supplemented by a fully illustrated descriptive article which will be found on pages 965-973 of the present one. Soon after the engine had been finished we were able to make a thorough inspection of it at Doncaster after studying the detailed drawings there. The result of such a study and inspection is to lead one to realise that in this new design Mr. Gresley has again broken away in certain important respects from what may be termed standard practice, and has associated a number of features which, orthodox though they may be when regarded from an international point of view, are nevertheless in some degree experimental in so far as this country alone is concerned. The new locomotive has been built to provide the solution of a difficult problem; one that has given concern to the Operating Department of the railway for some time past, *i.e.*, the handling of express trains weighing up to 550 tons on the very difficult section of line connecting Edinburgh with Aberdeen, the grading of which is severe. The maximum permissible load for a Pacific engine is 480 tons from Edinburgh to Aberdeen and 420 tons from Aberdeen to Edinburgh. It is frequently found necessary to resort to double heading with the heaviest trains, but in the case of the Pacific engines the practice is not allowed on this section. The point had, therefore, been reached whereat something of a decisive nature was called for involving the introduction of an entirely different class of locomotive. The new 2-8-2 engines, of which No. 2001 is the precursor, are the result.

Merely to say that the design incorporates all the features essential to the development of the necessary power output for the work to be performed represents nothing more than the truth superficially expressed. One turns instinctively to the tractive effort figure and notes with interest that at 85 per cent. of the boiler-pressure (220 lb. per sq. in.) it amounts to 43,462 lb. But tractive force is not everything and the next question is, what about the boiler? Here, as every competent observer is aware, reposes the secret of success or failure. The boiler fitted to this engine is similar to that of the Gresley Pacifics; its general outline is the same, and, with an improved form of superheater giving a high degree of superheat, a clever steam collecting device that ensures added dryness of the steam passing through the extra large regulator valve and, indeed, practically rules out priming altogether, an enlarged grate area and well devised boiler feed arrangements, there is ensured a high standard of boiler performance.

In so far as such figures provide an index to this, it may be noted that the boiler horsepower amounts to 1,777. The grate area is 50 sq. ft., and of the total (engine) weight of 110 tons 5 cwt. in working order 80 tons 12 cwt. are available for adhesion. Next, we commend the attention of our readers to the design of the cylinders and piping, supplemented as they are by excellent draught arrangements, incorporating a double blast pipe and chimney which can be relied upon to reduce back pressure in the cylinders to a minimum. Here Mr. Gresley has adopted a plan that has met with great success in France, originating with Monsieur Chapelon of the Paris Orleans Railway. The front end is very simply laid out and altogether admirable. A carefully designed system of poppet valves and gearing, in which steam and exhaust valves of unusually large diameter are used, is applied to the engine. The second locomotive of the series will have Walschaerts gear and piston valves, so that a comparison can be made between the two systems of steam distribution under identical conditions of service. An incidental but significant modification is incorporated in the tender, by substituting welding for riveting, whereby an appreciable reduction of weight has been effected.

Competent critics will question, indeed they have already questioned, the necessity for the 2-8-2 wheel arrangement with wheels of so large a diameter as 6 ft. 2 in. Others will reply by asking, why such arrangements should not be adopted, and among such we venture to number ourselves. For the reasons given in the leading article entitled " 2-8-2 Express Engines " in our last week's issue there is much to be said in favour of omitting the four-wheeled bogie at the front end in the circumstances governing the design, while as regards the diameter of the coupled wheels, those who think it excessive may be reminded that in addition to hauling the trains up the very steep gradients encountered on the route, the engines have to romp them down the other side in correspondingly good fashion. We have sat in the driver's seat of the new engine. Only by so doing can one realise the ease with which the regulator handle and other controls can be reached and manipulated while seated. This, combined with the wonderfully clear outlook from the cab through the large front windows and other excellent footplate arrangements, worthily rounds off what is in all respects a noteworthy and very clever locomotive design upon which Mr. Gresley is to be congratulated. On trial the engine has shown remarkable qualities of acceleration, free steaming and general liveliness. It, and the others of the same class, may be confidently expected to provide the solution to the problem with which the L.N.E.R. company has been faced in the past on the Edinburgh-Aberdeen route.

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Railway Rates Tribunal

THE Railway Rates Tribunal was set up under the provisions of the Railways Act, 1921, and, in compliance with Section 22(3) of that Act, its twelfth annual report was recently presented to the Minister of Transport and published. The tribunal remarks in its report that during the year its jurisdiction was enlarged by reason of certain provisions of the London Passenger Transport Act, 1933, and the Road and Rail Traffic Act, 1933, so that the report covers the extensive duties placed upon the tribunal by five separate Acts of Parliament. Foremost among these is the Railways Act, 1921, under Section 28 of which the tribunal has power to determine any questions that may be brought before it in regard to railway rates and fares for the conveyance of passengers, merchandise, minerals and livestock. In this connection fifteen applications were dealt with during the year, eleven of which sought approval of a number of exceptional rates, while four related to the general railway classification of merchandise and the quantum of the reductions to be made from the standard charges in respect of certain traffics consigned at the owner's risk. The most important duty carried out during 1933, however, was the annual review of the standard charges and exceptional charges of the four amalgamated railway companies which took place in May.

No applications were made to the tribunal under the Railway (Road Transport) Acts, 1928, but in connection with the annual review mentioned above, accounts were placed before it showing the financial results obtained from the operation of the businesses established under these Acts which are to be deemed to form ancillary or subsidiary businesses within the meaning of Section 59(6) of the Railways Act, 1921. Under the Local Government

Act, 1929, the tribunal is required to review the operation of the Railway Freight Rebates Scheme within two months after the end of each year, and as the fourth year of the operation of the scheme ended on September 30, 1933, a public sitting was held for this purpose in November. After hearing evidence from the railway companies and other interested organisations, the tribunal directed that as from December 1, 1933, certain alterations should be made in the quantum of the rebates previously allowable on selected traffics. Incidentally, it expresses satisfaction that since the scheme first came into operation very few disputes have fallen to be decided by it and, in fact, during 1933, it was required to determine only one dispute under the provisions of paragraph 16 of the Eleventh Schedule to the Act.

Under the Road and Rail Traffic Act, 1933, the Tribunal was empowered to deal with all applications for the approval of agreed charges, and the Act also confers upon it the power, upon the application of any trader whose business will be, or has been, detrimentally affected by any agreed charge, to fix a charge in his favour. These provisions did not become operative until January 1, 1934, and since that date the tribunal has dealt with a large number of such applications; in fact, this work has occupied the major portion of its public sittings this year. The fifth part of the duties of the tribunal relates to the various responsibilities connected with fares, services, &c., delegated to the tribunal under the London Passenger Transport Act, 1933, but its jurisdiction in this respect was not invoked during the year.

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Swiss Federal Railways

THOUGH the traffic receipts of the Swiss Federal Railways for the year 1933 showed a decrease of fr. 6,584,850 or 1·99 per cent. below those of 1932, this setback was very much less than the heavy falls during each of the crisis years 1930 to 1932. Prospects for the present year have improved, as the receipts for the first quarter are up to those of the corresponding period of 1932, but the recently issued report of the administration for the year 1933 prefers to adopt a cautious attitude for the time being. An encouraging sign has been the slight improvement during 1933 of 52,000 tons or 2·6 per cent. in transit traffic, which had fallen to about one-half of what it had been in 1929. Internal goods traffic has also been stimulated by administrative action for its revival, and the total receipts from luggage, live stock, and merchandise were only 2·61 per cent. below those of 1932. In passenger numbers the decrease was 1·7 per cent. and in passenger receipts 1·13 per cent.

In working expenses there was a substantial saving in spite of an increase of 250,000 in passenger train kilometres. To cope with the decrease in traffic during the years of crisis, measures of rationalisation have been adopted, with the effect of substantially reducing the number of staff and the amount of their remuneration, although there was no cut in scales of pay during 1933. The number of staff is now 30,940, against 40,498 in 1920. In the early part of 1933 the railway administration proposed a cut in salaries to take effect as from the second half of the year, which was estimated to produce an annual saving of fr. 13,000,000, but on a referendum to the whole nation on May 28, 1933, this proposal was rejected. On October 13, however the federal assembly adopted a financial programme which included a general reduction of salaries, on a different basis. On the railways this means an annual saving of fr. 8,000,000 to be effective during 1934 and 1935. Staff expenses represented in 1933 about 77 per cent. of the total working expenses. In the cost of fuel and electrical energy (fr. 24,778,080) there was a saving of fr. 1,848,933. The accompanying table compares financial results in 1933 and 1932, the present rate of exchange being 15·65 francs to the £.

	1933	1932
Passenger numbers	114·8 millions	116·9 millions
Goods tonnage	14·8 ,,	15·3 ,,
	Fr.	Fr.
Passenger receipts	135,213,516	136,755,361
Goods and postal traffic receipts ..	188,956,506	193,999,510
Gross receipts	336,615,946	342,953,326
Working expenses (net)	259,924,815	273,301,767
Net receipts	76,691,131	69,651,559

In the final result the deficit for the year 1933 is fr. 48,818,605, comparing with a deficit of fr. 49,823,204 for 1932. The work of doubling sections of single line has been continued, 14,688 metres of such work having been completed during the year, and further doubling is proceeding. During the year the tunnels between St. Ursanne and Courgenay have been improved and re-lined in view of the electrification of that section, and the first stage of the new marshalling yard at Muttenzerfeld near Basle has been completed. Among the works in progress are the reconstruction and enlargement of the stations of Geneva, Neuchâtel, Waedenswill, and Brougg, and station alterations at Zurich. In view of the electrification of the sections Bienne-La Chaux de Fonds and Langnau-Lucerne the tunnels on those sections are being re-lined and improved. Some 39 level crossings were abolished during the year. In December last the administration decided on the introduction of the Signum inductive system of automatic train control, and sanctioned a credit of fr. 3,000,000 for this purpose, to be spread over three or four years.

* * * *

A Town Travels Free

THE early days of railways provided many instances of individuals or corporate bodies, such as town councils or business companies, securing the inclusion in Parliamentary Acts of clauses which gave them special advantages with the coming of the railway. There were cases of landowners obtaining the power to stop certain trains at will, to suit their convenience, of towns being able to compel all trains to stop, and even of refreshment room proprietors having the same, for them, very convenient control over the traffic. A curious instance of a town enjoying special railway facilities for a space of ninety years, and one which must surely be unique, is to be found in the case of Lauenburg in Germany, a place of 5,000 inhabitants, situated on the Elbe in what is now the Prussian province of Schleswig-Holstein, but which was in 1844, when the facilities were obtained, the Duchy of Lauenburg, united to the Crown of Denmark. The facts of the case have been set forth by Dr. Wachtel in the *Journal of the Central European Railway Association* and we think it of interest to reproduce the principal points among them. At the present time any inhabitant of Lauenburg, recognised as such by the railway authorities and furnished with the necessary proof, can travel free, or send his goods free, over the 12·3 km. section of the Reichsbahn between Lauenburg and Büchen, where it joins the main line from Berlin to Hamburg. (See map on page 964.) The origin of this peculiar privilege is as follows. When the Berlin and Hamburg Railway Company proposed to build its line the promoters had, of course, to obtain the consent of the Duchy of Lauenburg to pass through that territory, which really meant obtaining permission from the then King of Denmark, Christian VIII. Unlike some towns in those days which insisted on keeping the railway at a respectful distance,

Lauenburg was anxious that the line should run through it, a plan which would have taken the route along the banks of the Elbe. The company favoured the making of a less costly line passing some distance to the north of the town, and the matter was referred to the Danish Crown for decision. The King declared that there was no obligation on the company to run through Lauenburg provided they afforded some equivalent facilities for the town, and it was subsequently decreed that a branch line should be built from the main line, over which the Lauenburgers should be entitled to travel for nothing to reach the former, unless the company obtained release from this obligation by making some monetary compensation acceptable to the town. Terms were, in fact, offered with this object but were declined by Lauenburg, and after the death of Christian VIII, the new King, Frederic VII, confirmed the attitude adopted by his predecessor, thus clearly establishing the town's privileged position.

The main line was opened in 1846, but the branch to Lauenburg was not opened throughout until 1853, for which delay the company had to pay a considerable fine. The Lauenburgers then became entitled to travel on it free if they took out a ticket to a station on the main line, or, in the other direction, took one to Büchen, the junction point, such tickets being available to Lauenburg. Notwithstanding the territorial changes following the wars of 1848 and 1864, the settlement of the Schleswig-Holstein question and the founding of the German Empire in 1871, these rights remained undisturbed. The people of Lauenburg were not satisfied with free passenger travel only, however, and in 1881 they brought an action to compel the railway to carry their goods free over this section and finally won it, so that from 1883 this further advantage has been secured to them. Other actions have also been brought in this matter. The company maintained, for example, that free travel should be accorded only to persons actually intending to go to places on the main line, and it sued a passenger who took a ticket to Müssen, on that line, and then journeyed on to Lübeck over the Lübeck-Büchen Company's route, but it lost the day. It also proceeded against a mayor of Lauenburg who took a similar ticket and, it would seem, left the railway altogether at Büchen, but it was again unsuccessful. These cases merely served to establish the town's position more firmly than ever.

In 1932 Lauenburg came forward with yet another claim, namely, that the taking of a platform ticket at Lauenburg should entitle the holder to travel to and use the platform at Büchen, as if he had taken such a ticket there! In addition it was contended that for every train on the main line stopping at Büchen a connecting one must be run on the branch. No decision on these claims has as yet been announced. Curiously enough, in 1853 the town complained to the King of Denmark that there were only two trains daily on the branch to four on the main line, and that the rolling stock was also inferior. It asked for equality in these respects. A reply was received to the effect that the good Lauenburgers were being well looked after in a fatherly manner and must not try to stand on the mere letter of the law and put forward unreasonable demands. As long as they could get to and from Hamburg and Lübeck daily they ought to be satisfied. Perhaps some learned authority will now, on behalf of the Reichsbahn, endeavour to make a similar argument prevail!

PUBLICATIONS RECEIVED

Proceedings of the Institution of Railway Signal Engineers. Part II. Session 1933-34. M. G. Tweedie, Honorary Secretary, G.W.R. Signal Works, 80, Caversham Road, Reading, Berks. Price to Non-Members 7s. 6d. —This volume contains the report of the discussion on wrong-side failures of track circuit, caused by sand, rust, grease, &c., initiated, at the request of the Council, by Major R. Falshaw Morkill on November 8, and the paper, with its discussion, by Mr. H. H. Dyer, on the financial side of signalling economies, read on January 17. There is also included the prize-winning student's essay by Mr. J. S. Davis on the component parts of a mechanical signalling plant and their functions. An interesting feature of the present Proceedings is that it contains a photograph of those members of the Council—22 out of a possible 32—who were present at the last meeting of the 1933-34 session.

American Railway Signalling Principles and Practices. —The Signal Section of the American Railway Association, New York City, 30, Vesey Street. 15 cents to railway servants; 25 cents to the public.—We have had occasion from time to time to congratulate the Signal Section of the American Railway Association on the remarkably useful pamphlets entitled as above, which are being compiled by a committee and, after approval by a general meeting of the Signal Section, are issued as each subject is complete. There will be about 24 pamphlets in all, of which 10 have been published for some little time. Now we have received Chapter III, Principles and Economic Phase of Signalling, and Chapter XIX, Electric Interlocking. As typical of what these pamphlets contain, it may be observed that the last-named have 70 pages of printed matter, wherein are also 53 illustrations consisting of the reproduction of 14 photographs, 27 drawings, and 12 diagrams.

A Wheel Lathe Record.—Under this title Craven Brothers (Manchester) Limited publishes a new folder summarising the firm's achievements since its foundation in 1858 and giving the specifications of two machines for turning locomotive and tender and carriage and wagon wheels. Prominence is given to the fact that 800 wheel lathes have now been supplied to all parts of the world, 250 of them having been ordered since 1918. The shops of 78 railways in 43 countries are now equipped with Craven wheel turning machinery. By permission of the railway companies concerned, some striking particulars are reproduced of output tests conducted with carriage and wagon wheel lathes at the L.M.S.R. works at Newton Heath and at the G.W.R. works at Swindon. Both the lathes selected for illustration and description in the folder are of very massive construction and suitable for the heaviest duties. Robust, totally enclosed headstocks with electric, pneumatic or hand-operated locking clamps are a feature of each machine. The quick power traverse to the headstocks is by electric motor. The main driving motor is built into the lathe, and transmission is through gearboxes providing an adequate range of speeds for all purposes. Pneumatic gear-change can be incorporated in the larger locomotive and tender wheel machine.

Jointing Materials.—Jointing compounds, pastes, tapes, and other materials, and cable sockets, connectors, and carrying gear are described in a new illustrated catalogue published by British Insulated Cables Limited, Prescot, Lancs. Thermometers for testing the temperature of solid setting compounds, sets of tools, and insulating rubber gloves tested up to 10,000 volts are also listed.

Aluminium in Industry.—This is an illustrated eight-page brochure published by the British Aluminium Co. Ltd. Photographs emphasising the many applications of the metal, which range from engineering to architecture, are the principal feature, but there is a wealth of interesting matter in the descriptive captions. Aluminium on the railway is shown in illustrations of the Hardy streamlined railcar of the G.W.R., the body of which is panelled in aluminium sheet, and of a batch of road-rail containers.

LETTERS TO THE EDITOR

The Editor does not hold himself responsible for opinions expressed by correspondents

Recovering Lost Time

20, Graham Park Road,
Newcastle-on-Tyne.
May 21

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Lord Monkswell has, I am afraid, rather misunderstood my letter of April 30, published in your issue of May 11. No one values punctuality more than I do, and I therefore place great importance upon regaining lost time. I contend, nevertheless, that the way to get the men to make up this lost time is by encouragement rather than threats. Exactly what is meant by the G.W.R. men being told " that if they did not make up lost time they would have to make way for those who would " I cannot say, and I fail to see how such a threat could be carried out.

I suggest that a little encouragement on the part of the companies, which seems to be noticeably lacking, would have all the desired effect. Furthermore, the companies would be able to take more drastic action in any known cases of non-observance of restrictions than they would be able to had the men been running under threats. What form such encouragement should take is difficult to say, but regularly posting up in each shed the punctuality figures for the trains worked by that shed, as well as the equivalent figures for other sheds, might perhaps have a good effect. A few challenge cups for competition between groups of sheds might give added interest!

Yours faithfully,
J. R. HAWKES

[It may be taken that no threats are made for failure to make up lost time, but that what Lord Monkswell quoted was the driver's colloquial way of expressing that enterprise was encouraged. In our experience the drivers who make up lost time are nearly always those who most carefully observe speed restrictions.—ED. *R.G.*]

More Economical Locomotive Working

Kenya & Uganda Railways Administration
Nairobi.
May 11

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—A correspondent in the issue of THE RAILWAY GAZETTE of April 13, writes on the subject of " More Economical Locomotive Working." This is a subject which is bound to attract the attention of all operating officers, and few will be found who will quarrel with the proposal that the time-table department and the locomotive diagramming staff should be combined under a well trained and experienced head.

In some Colonial railways this has already been accomplished, and in others the very closest liaison exists between the two staffs, but does the proposal go far enough? Should not the whole of the running side of locomotive work be incorporated with the operating side, as is done in several countries? The main point, however, is the question of the provision of services. Does not the writer place the cart before the horse, metaphorically speaking? The function of a railway is to sell transport, and to sell it to the public in the form that the public wants it, not to sell it in the form that the railway operating officers find most convenient.

It is a fact that time-tables, like Topsy, have just growed, but unlike Topsy, it will be found generally that the time-table has " growed " in response to public requests and demands. Only those who have had experience in building time-tables can have any idea of the inconvenience and upset which can be caused to the public by time-table alterations of only a few minutes. To uproot and alter the whole of the British time-table would, I imagine, cause a public outcry. On the other hand, to attempt to ascertain the actual requirements of the users in various areas would result in all sorts of conflicting demands. So that unless there is any specific demand from the users, and such demands do not result in inconvenience to other users, or alternatively, unless improvements can be introduced without inconvenience to users, it would appear that the present services generally meet the wishes of the users. If not, I think reliance can be placed upon the new organisation set up by most railways for ascertaining the wishes of the public. It might be interesting to hear the views of Mr. Ashton Davies on a proposal to recast a large part of the time-tables to suit locomotive working. On the other hand, where alterations can be made without inconvenience to the public, or without reducing the sale of transport, then the greatest care and attention should be paid to locomotive requirements. To quote an analogy, there is little doubt that considerable savings in cost could be made were it possible to avoid the very heavy demands on the delivery service in most cities in the early morning, and the equally heavy demands on the collection service in the evening, regulating the flow evenly throughout the day, but to do so would be failing to meet the public demand.

Long and continuous engine runs are certainly most desirable, but the failure to utilise this form of economy is not the fault of the time-table section. The difficulty is a technical difficulty, and is bound up with the policy followed by the mechanical engineer. In some quarters the method of controlled pooling of locomotives or some similar system of allotting more than one crew to an engine is still strenuously opposed, and yet without some such method, long and continuous engine runs are impossible.

In connection with the third principle put forward by the writer of the article, it is agreed that generally speaking a train engine is a bad shunting engine; on the other hand, to provide small shunting units at small wayside stations would be more expensive than the occasional use of a train engine. Wayside shunting with train engines should, however, be avoided, as far as possible, by utilising other mechanical means or pick up trains or, as is suggested, combining two or three adjacent yards together, but the meeting of the public demand for prompt placing of wagons as soon as possible after arrival must not be overlooked in the desire for low locomotive costs.

Yours faithfully,
R. E. ROBINS
Assistant Superintendent of the Line

A Suggestion for Simplified Train Services

London.
May 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—You published a letter from me under the above heading on March 16 and Mr. C. R. Clinker replied to it in your issue of May 4. He succeeded in giving a totally false impression of my scheme on almost every point.

However, for the present he should try and get clear as to this much: that by virtue of my hour section principle, Burton-on-Trent, Birmingham, Worcester, Gloucester, and Swindon can each be placed within three hours by rail of Hunstanton, Norwich, Ipswich, Colchester, and Southend via Woodford and Cambridge with all running economically justifiable and a maximum speed of 90 m.p.h. not exceeded. Therefore in my letter of March 16 I proved absolutely that the scheme of cross country journey timings between East Anglia and the Severn could be halved for a matter of constructing 45 miles of new line amounting to some 9 per cent. of the existing line which would be utilised. Is this excessive? Can Mr. Clinker get so radical an improvement as easily?

Yours, etc.,
J. F. POWNALL

THE SCRAP HEAP

One way of keeping a railway carriage to oneself was explained by the Bishop of Woolwich in a recent sermon at a special undergraduates' service at University Church, Oxford. "Wear a clerical collar," he said, "a very high one, and carry an unlighted cigar. If a man comes along and wants to get into the carriage show him your collar; if a woman comes along let her have a look at the cigar. I guarantee you will have the carriage to yourself, however far you are travelling."

* * *

UNDERGROUND TO CHESHAM

Two Londoners who, after studying the poster "Underground to Chesham," decided to make the trip, afterwards remarked upon the wonderful scenic beauties existing below the surface, especially as between Rickmansworth and Chesham. A sceptical friend to whom they related their story compromised matters by saying that it could have been nothing more than a clever reproduction of the actual thing, as found in that locality above ground.

* * *

THE UNSPEAKABLE SCOT

A writer in *The Passing Show* relates an unusual and alarming experience that befel him shortly before the war when driving a light engine on, apparently, the late Midland Railway. The narrative is headed "This *really* happened."

He was running at night from near Birmingham to Cheltenham and had just restarted after a signal stop when he saw the reflection of two white lights in the weather glass. As the writer logically remarks in his own account:—

It did not originate from any object ahead. Clearly, then, it must come from some object in our rear, which was keeping pace with our engine. I looked back over the bunkers and to my horror I saw two bright lights. *One, on top, was white, and the other, to the left side below, also white! They were the code signs of an express passenger engine!*

In a flash it was borne in upon him that his pursuer was none other than the "Night Scotchman." He continues:—

Her driver was totally unaware that our light engine was travelling just ahead of him on *his* line. Indeed, it was the last thing he would expect, and it was evident to me that the signalman at A——, the junction mentioned, *had forgotten we were in the same section*, and close to his box, when he accepted the oncoming Scotchman, and offered her a clear road.

Instantly, I opened the regulator wider, till it was in the top notch. My fireman frantically shovelled coal into the mouth of the roaring fire-box, for we had to raise all the steam we could in a short time. . . . It was a thrilling race between *the needle moving on the dial* in our engine cab, and the buffer and boiler lights astern, and our lives were the stakes! . . . Five minutes had passed—they seemed an hour—and our engine was now doing more than sixty miles an hour.

Right ahead, racing towards us, came a green light on the distant signal on a post by a bridge in front of the station of Cleeve. The Scotchman seemed to be gaining on us. Could I warn the signalman in the box ahead, in time to save ourselves?

I opened the whistle and kept a piercing scream going while we roared through the quiet country station sunk in sleep and darkness.

Happily, the plan succeeded, for as they passed the box a face peered out of the window, "amazement and horror written large upon it." But the signalman kept his head and, as the writer later learned:—"Quickly realised the situation and set the signal against the oncoming Scotsman. An impatient whistle came faintly from our rear, but we were tearing along the line as though hundreds of devils were behind our tender.

I heard, later, that a profane fireman stepped down from the footplate of the Scotchman and went across to the signal-box, breathing objurgations. He was quite oblivious of what had happened.

Owing to the curving nature of the track on which we had raced, he had not observed our red tail-lamp.

What he and the driver said when they were told they had been chasing a light engine all the way from A—, may be left to the imagination. I know that we thankfully watched her roar past us, half an hour later, when our engine stood safely in a siding at Cheltenham."

(The italics are ours.)

* * *

One has breakfast and lunch in a Russian dining-car attached to the train. There is a large printed notice stating "Tips degrade the receiver," but every user of the dining-car appears to degrade the waiters, who receive tips and seem to be grateful for them. Breakfast consists of the inevitable *chi* and of bread, which is of very good quality, and butter, which looks better than it tastes. This simple meal costs about half-a-crown. Lunch consists of soup, meat, vegetables, and cheese, and costs about six shillings. It is neither good nor bad, but just mediocre and rather expensive.—*From "Mirrors of Moscow," by H. J. Greenwall.*

* * *

One of the most cherished possessions of a railway guard in the employ of the Canadian National Railways is a cheque for fivepence covering his first month's wages. He is Mr. E. English, of Winnipeg, who joined in 1913. Under the terms of his engagement, his uniform was supplied by the company, but the cost had to be deducted from his first month's pay. When this had been allowed for only fivepence was left. The cheque, numbered 12,640, is signed by the Assistant Paymaster and the Treasurer and endorsed "in full for services rendered during the month of January."

This dog is obviously happy in the special compartment provided by the German State Railway for him and his colleagues

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

Railway technical instruction in Brazil — New large Russian locomotive works and increasing orders for British plant—Narrow gauge amalgamation in Spain—German steam railcar—Fast trial run in Egypt

BRAZIL

Professional Instruction of Railwaymen

At one of the recent meetings of the São Paulo Rates Tribunal, the President called the attention of the railway representatives to the initiative shown by the Education and Public Health Department, and also by the Government of the State of São Paulo, in the development of professional instruction amongst railwaymen. In the course of a subsequent speech, Dr. Roberto Mange explained the objectives of this move on the part of the authorities, and showed how the Government could contribute still further to the campaign. He also alluded to the practical results already attained by the Sorocobana Railway in this direction. The representatives of the railways declared themselves in favour of the movement, a resolution being made to the effect that Dr. Roberto Mange should seek the views of all the railway concerns interested, and afterwards submit for the approval of Government, a practical *modus operandi* based on the resultant agreement.

U.S.S.R.

An "Aero Train"

An experimental unit described as an "aero train," which, it is hoped, will contribute materially towards the problem of providing fast and cheap communication in parts of Russia where the nature of the country makes the construction of orthodox railways very difficult, has recently undergone trials in Moscow. The principle involved is not dissimilar to that of the Bennie "rail-plane," which was tested in 1930 over a special track erected alongside the L.N.E.R. between Milngavie and Hillfoot, near Glasgow. Both systems adopt an overhead track from which the passenger cars are suspended, and use air-screw propulsion, but the Russian "aero train" has its cars arranged in pairs, one on each side of the single rail, with runners between the concrete supporting structure and the vehicles to maintain equilibrium. The propellers of the experimental train are driven by two diesel engines, totalling 1,060 h.p. It is intended that in the standard model the seating capacity shall be increased from 40 to 300 passengers in a two-car unit. Proposals for three railways of this type in difficult areas are being investigated. The most ambitious scheme is for a line 31 miles in length from the sulphur mines at Karadag to the main railway route. The other plans involve some 18½ miles from Neftedag to the workers' settlement, which will probably be the first to be undertaken, and a line across the Amu-Darya river from Kirky.

Locomotive Building Plans

The Lugansk (Ukraine) locomotive works, which began production on January 1 of this year, are due to be working at full capacity early in 1935. They should then turn out 1,000 large FD locomotives, 2,000 stokers, and 1,000 tenders per annum. A new locomotive-building plant with a yearly output of 400 engines, 400 tenders, and 10,000 tons of spare parts is to be built at Novocherkassk, Northern Caucasus. Plans have also been completed for works at Omsk to produce 2-10-2 and 2-10-4 locomotives, diesel locomotives, and large quantities of spare parts annually. The erection of further large scale plant at Stalinsk, Western Siberia, is under consideration.

Orders in Great Britain

Orders for materials and machinery placed in Great Britain during April amounted to £1,223,018, as compared with £161,834 in April, 1933, representing a more than sevenfold increase. Aggregate orders for the first four months of the year showed an increase of 140 per cent. on 1933.

INDIA

The sixth annual meeting of the Indian Roads and Transport Development Association was recently held in Bombay, with Mr. Eric Miller in the chair. The Chairman reiterated the association's view that the first essential step towards the co-ordination of transport was to persuade the Government of India to re-arrange the portfolios of the Executive Council and to create a separate portfolio which would have exclusive charge over all forms of communications. Mr. Miller referred to Sir George Schuster's offer at the road-rail conference last year to make special loans to Provincial Governments for road development. Provincial revenues were obviously inadequate to finance road development on a scale commensurate with the vastness of the country. The Finance Member's offer, therefore, was one which no Provincial Government should neglect, particularly in view of the low rate of interest now prevailing.

A new resolution drawn up in connection with the renewal of the Central Road Fund, which expired a few weeks ago, on the completion of five years, provides for additional powers for the administration of the fund. An important change has been made in the uses to which the petrol tax fund may be applied. Provincial Governments will be relieved of the burden of interest charges on loans raised for road development, as such charges may now be drawn from the petrol tax fund. Before the last session of the Legislative Assembly terminated, Sir Frank Noyce, Member for Industries and Labour, informed the House that the inauguration of the Road Development Account five years ago had enabled Rs. 5 crores more to be expended on road development than would otherwise have been possible. About a crore of rupees remained unspent on account of the reluctance of Local Governments to add to their liabilities for maintenance during the financial depression. The sponsors of road development are desirous of co-operating with the railways in linking up rural areas with existing road and rail communications.

Railway Survey

The Railway Board has sanctioned traffic and engineering reconnaissance surveys by the Jodhpur Railway administration for a metre gauge line of railway from Jhudo to Khadro, via Pithoro, a distance of about 129 miles.

Industrial and Residential Sites along Railways

In order to encourage industrial or residential development on land adjacent to the railway, the Eastern Bengal Railway administration has opened a register showing where and what land is available for the purpose. Landowners wishing to take advantage of having their surplus land included in the register for these purposes are invited to furnish as much information as possible in respect of such lands. The railway administration is also prepared to answer inquiries from firms and public bodies interested in land for industrial or residential development.

Indian and Foreign Railways Compared

In his budget speech, the Chief Commissioner of Railways gave an interesting comparison of operating ratios on Indian and foreign railways. For the year 1932, the operating ratio on the amalgamated British railways was 85·5 per cent., for the Canadian Pacific Railway 84 per cent., for the Canadian National Railways 96 per cent., for the U.S.A. railways 77 per cent., and for the German State Railway 102 per cent. It is not clear whether these figures are reckoned on merely ordinary working expenses or include allowance

for depreciation. Whichever is the case, the operating ratio on Indian railways admits of favourable comparison. For the year 1932-33, the operating ratio on Indian railways was 57·3 per cent., reckoned on ordinary working expenses. If full appropriation to the depreciation fund is included, the figure is raised to 73·4 per cent.

SPAIN

A Head-on Light Railway Collision

A disastrous collision occurred on the line of the Catalan Railway Company, near Barcelona, on May 21, by which no fewer than 13 persons lost their lives and 35 were injured. It is not known at present exactly how the accident occurred, but according to the versions given in the press, the driver of one of the trains must have left San Baudilio without having received the line clear, meeting in a head-on collision at Puente de Torres, the down train from Barcelona. The railway in question is a narrow gauge line, single track, with an intensive suburban traffic between Barcelona and the towns in the Llobregat district. The trains were unusually crowded on account of the feast of Pentecostes, and this accounts for the large number of casualties.

Regrouping of Railways in Vizcaya

Negotiations are in progress, under the auspices of the Director General of Railways, in the Ministry of Public Works, with the object of forming a consortium for the working of the small narrow gauge railways in the Vizcaya provinces in the north of Spain. It is expected that the regrouping which is proposed will include the Bilbao-Santander, Vascongados, Astilleros Ontaneda, Vasconavarra and the small railways and tramways between San Sebastian and the frontier. It is proposed also to include, under some system of co-ordination, the organised road transport in this district. This consortium, if it can be carried into effect, will solve the problem, which has recently become acute, of several of the small railways in that district whose existence has become imperilled by the decrease in traffic and continually increased cost of working. There are so many of these small companies that it is expected that the gain from centralising the administration and pooling of resources, will be considerable, and more than sufficient to convert the present unprofitable working of most of the lines into a prosperous concern. The question of the intervention of the State in the proposed consortium arose in a debate the other day in Congress when the Minister of Public Works, in answer to a question, explained the position of the Amoriebieta-Guernica-Pedernales line, which had to be taken over two years ago by the State, as the concessionary company was unable to continue working its line. The Minister explained that at present the difficulty is that the companies which have taken the principal part in organising the proposed consortium, are not prepared to continue to employ the staff of the old Amoriebieta Company, and on the other hand, it will not be easy to transfer this redundant staff to the other State Railways.

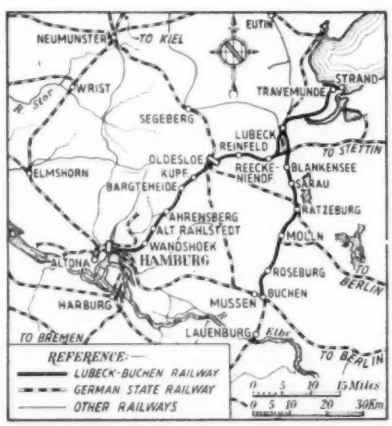
Andaluces Company

A Commission is shortly to be appointed by the Spanish Government to intervene in the economic and financial working of the Andaluces Company. The Commission is to report within a period of three months, making its recommendations of the measures it considers necessary to be taken to solve the present financial difficulties of the company.

GERMANY

Hamburg-Lübeck-Travemünde Steam Railcar Service

THE new railcar service of the Lübeck-Büchener Railway was inaugurated on May 15, 1934, thus establishing a considerably accelerated connection between Hamburg, Lübeck, and the watering places of Lübeck Bay. Built by the firm of Henschel & Sohn, with a Doble high-pressure steam generator and high-speed steam engine, the two-coach vehicle is about 164 ft. in length and weighs 90 metric tons (88½ tons). It has seating accommodation for 133 persons and is built for a maximum speed of 110 km. (68·4 miles) an hour. The non-stop schedule time for the Lübeck-Hamburg run of 39 miles is 49 min. Brown-coal tar oil is used as fuel. Two 120-atm. (1,704 lb. per sq. in.) boilers are provided, each with a heating surface of 19 sq. metres (204·4 sq. ft.) and a capacity of 30 litres (1·05 cu. ft.). Each boiler generates steam for a two-cylinder, compound steam engine running at 1,700 r.p.m. for a train speed of 110 km. (68·4 miles) an hour. The total engine power is 300 h.p. Exhaust steam is used to drive certain auxiliaries, including the furnace blower and the condenser cooling turbine in the roof, and is then condensed and returned to the boiler. The steam temperature and pressure are controlled automatically; and driving can be effected from the trailer by means of electrical remote control. (See illustration on page 974.)



Sketch map of Lübeck-Büchener Railway

The Lübeck-Büchener Railway, which is the largest and most important privately-owned line in Germany, was formed in 1850 and opened between the points named in its title in 1851. It soon became evident that the traffic to Hamburg (via Büchen) was by far the most important, and the company therefore opened a direct Lübeck-Hamburg line in 1864. The Travemünde branch, which completes the system as it now stands, was opened in 1882.

EGYPT

High-Speed Test Run

The distance between Cairo and Sidi-Gabir (Alexandria) is 203 km., (126 miles), and the fastest trains take 2 hr. 30 min., with an intermediate stop of two min. at Tanta. It has long been the desire of H.E. Shaker Bey, the General Manager of the Egyptian State Railways, to accelerate this service to cover the distance in 2 hr. On Saturday, May 12, a special train was run from Cairo to Sidi-Gabir composed of five coaches weighing 202 tons exclusive of engine, and drawn by standard Atlantic express engine No. 56 *King Fuad I.* The weight of the engine is 133 tons. The train was scheduled to cover the distance in 2 hr., observing reductions of speed to 90 km.p.h. over Kafr El-Zaiyat bridge and 100 km.p.h. between Tewfikieh and Saft El-Melouk (20·2 km.). (See illustration on page 982.)

The train left Cairo, with Mr. Kilby, Divisional Locomotive Superintendent, Cairo, on the footplate, at 10.50 a.m. and passed Benha 2 min. early. Unfortunately the train collided with a donkey at km. 64 between Tambesha and Birket El-Sab' and had to be brought to a stand, as a result of which about 10 min. were lost. Time, however, was made up by the engine, and in spite of p.w. and service slacks at Benha to 45 km.p.h., at Tanta to 30 km.p.h., and at Damanhour to 80 km.p.h., Sidi-Gabir was reached at 12.49½, the distance having been covered in 119·5 min. The maximum speed attained during the run was 125 km.p.h. (77·7 m.p.h.) between Kafr El-Dawar and El-Beda, and the average start to stop was 101·9 km. (63·2 m.) p.h. Including lighting up, the engine consumed 2·730 tons of Welsh steam coal and 3,400 gallons of water. The best running results obtained were with full regulator and cut off from 20-25 per cent. As a result of this trial run, it is likely that the timings of the fastest express trains between Cairo and Alexandria will be accelerated by 15 min., and later a further acceleration may be made, bringing Cairo and Sidi-Gabir within 2 hr. of each other.

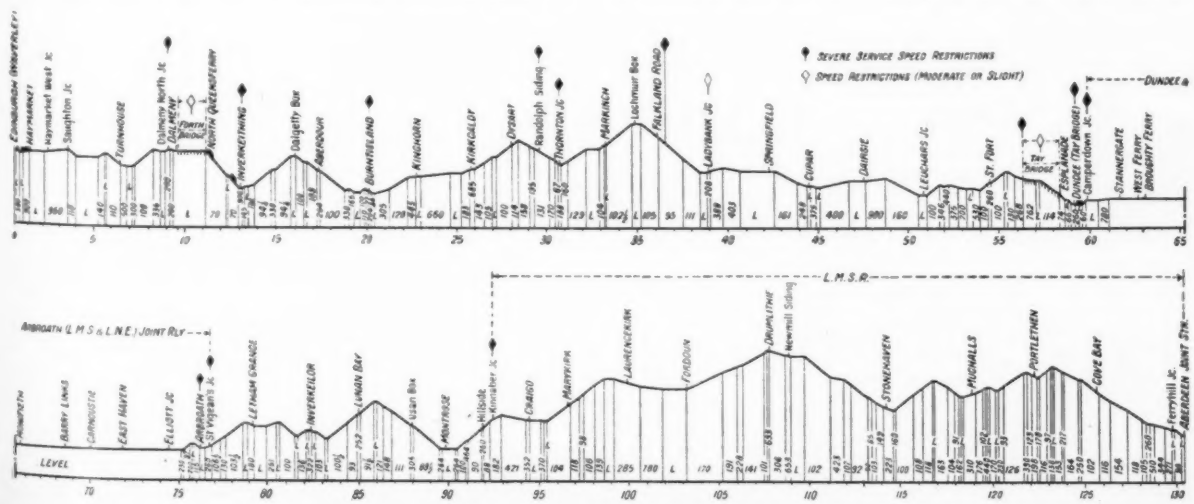
NEW THREE-CYLINDER 2-8-2 TYPE EXPRESS PASSENGER LOCOMOTIVES, L.N.E.R.

Specially designed for service under difficult conditions in Scotland, these engines incorporate in their design a number of outstanding features

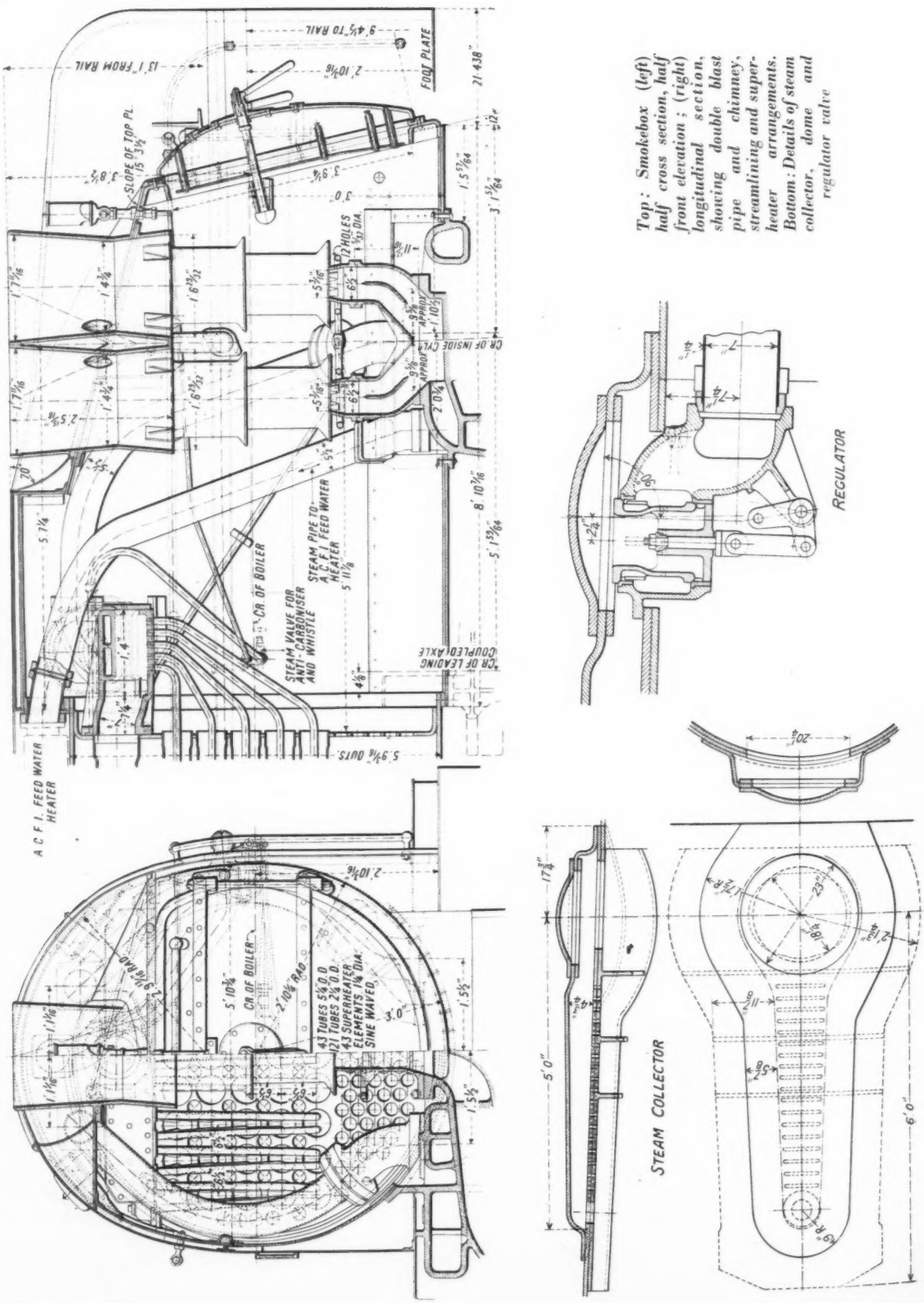
AS announced on page 880 of our issue dated May 18, the first of a new series of three-cylinder 2-8-2 express passenger locomotives has just been completed at the Doncaster works of the London & North Eastern Railway. It bears the number 2001, is named *Cock o' the North*, and classified P2. Five others, generally similar in design, will also be constructed there. Mr. H. N. Gresley, C.B.E., the Chief Mechanical Engineer, in accordance with whose design the engine has been built, has placed at our disposal a number of drawings and photographs, and from those reproduced herewith, supplemented by the descriptive matter by which they are accompanied, our readers will be enabled to derive a fairly comprehensive idea of the general characteristics of the engine and its special features.

As will be seen, the design incorporates all the essentials for the development of high tractive effort, made effective by an amplitude of boiler power and adhesion weight. The conditions to be met in operating express passenger traffic on the section of line with which the new engines will be principally concerned are of a particularly arduous nature. As the accompanying profile diagram of the line between Edinburgh and Aberdeen shows, frequent and steeply graded inclines are met with, as well as several awkwardly placed speed restrictions, and the service demands the ability to haul trains weighing up to 550 tons exclusive of the locomotive at relatively high average speeds over the whole section. This as a matter of course involves some very hard pulling uphill, followed by rapid descents on the down grades. The purpose aimed at was that of providing an engine that would perform this duty without double heading. The maximum permissible load for a Pacific engine is 480 tons from Edinburgh to Aberdeen and 420 tons in the opposite direction. It is frequently found necessary to resort to double heading with the heaviest trains, but in the case of the Pacific engines the practice is not allowed on this section. The tractive power exerted by the new 2-8-2 locomotive is 43,462 lb., as compared with the 32,909 lb. of the 4-6-2 engine with 19 in. cylinders and 36,465 lb. with 20 in. cylinders, the calculation being made in all three cases at 85 per cent. b.p.

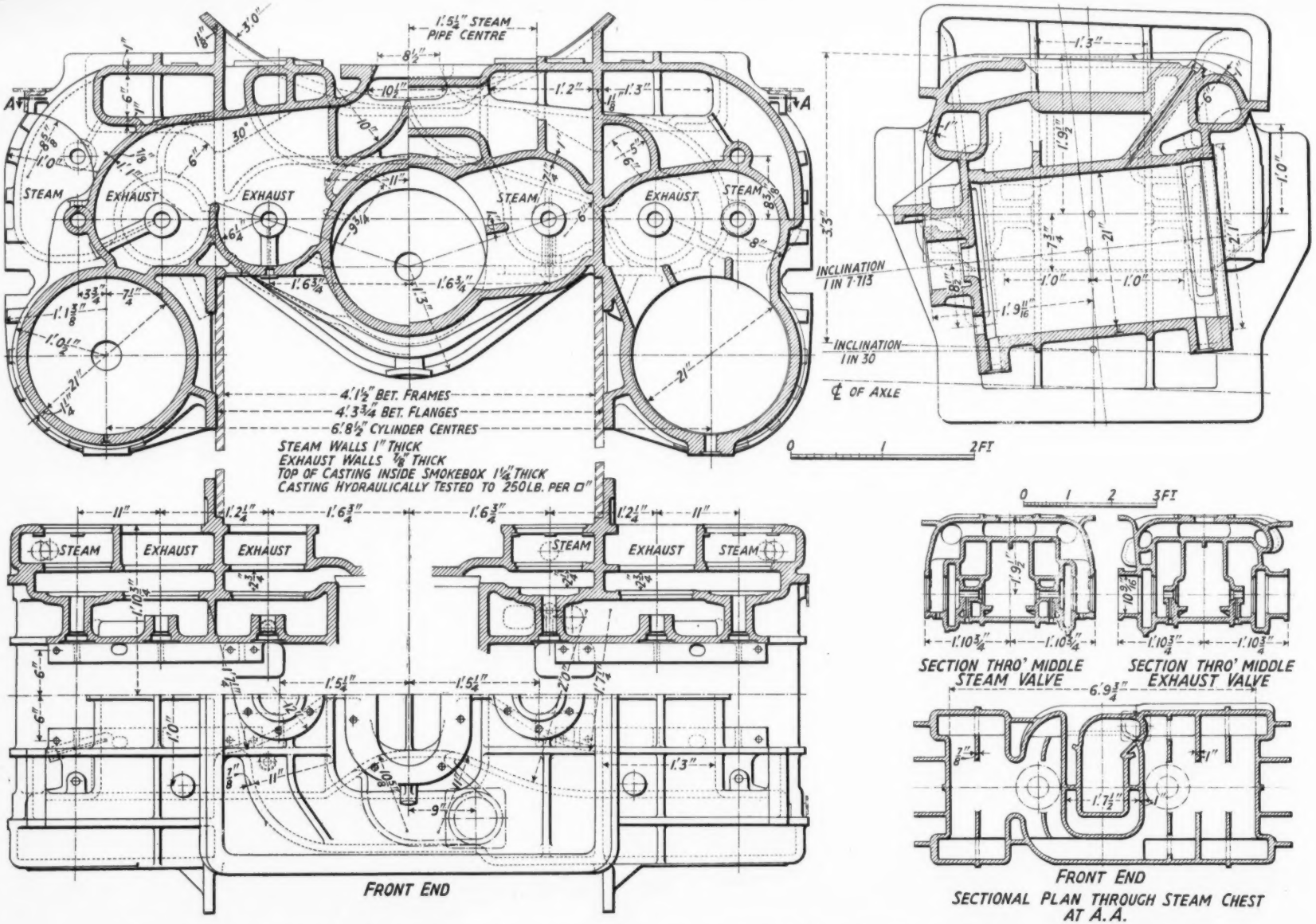
In the new 2-8-2 design three single-expansion cylinders of large size are used, in perpetuation of what is now standard practice for heavy duty main line locomotives on the L.N.E.R., both passenger and freight. A very great amount of care and thought has been devoted to the planning of these cylinders, which are cast in one piece on the monobloc system. The castings, manufactured at the company's works at Gorton, are most excellent examples of foundry production. The sectional drawings reproduced indicate the generous proportions of the steam and exhaust ports and passages and the methods adopted to ensure a free and uninterrupted flow of the steam to



Gradient profile of main line between Edinburgh and Aberdeen

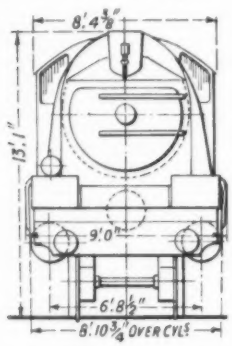


Top: Smokebox (left) half cross section, half front elevation; (right) longitudinal section, showing double blast pipe and chimney, streamlining and superheater arrangements. Bottom: Details of steam collector, dome and regulator valve



Sectional drawings showing design and construction of monobloc castings, incorporating three cylinders, steam chests and smokebox saddle

and from the cylinders. Very much depends in locomotive design upon cylinder clearances and accuracy in the distribution of steam covering the whole of the admission and exhaust periods, especially where the engine is to be called upon to perform work of such a heavy character, as in this instance, and it is difficult to imagine a better planned cylinder arrangement than the present one. Mr. Gresley has adopted the plan of equipping the first of the new locomotives with poppet valves and gearing, these being of the now well known R.C. pattern, and for the purposes of test the second engine of the series is to be fitted with Walschaerts gearing and piston valves so that each system can be tried out competitively and the results reviewed on a basis of direct comparison. Extra large diameter valves are used, viz., 8 in. for the steam and 9 in. for the exhaust. All three cylinders connect with the second pair of coupled wheels, the inside one being inclined at 1 in 7·713, whilst the outside cylinders are virtually horizontal. Single pattern slide-bars are fitted and the poppet valves work in a horizontal position. The arrangements of the steamchests in relation to the cylinder bores is seen in the drawing on page 967 and also in the half-tone reproduction on page 972.



End view

Wheel Arrangement and Boiler

The reasons for adopting the 2-8-2 wheel arrangement are easy to appreciate. The operating conditions may be said very conclusively to demand the use of four pairs of coupled wheels, in order that the necessary amount of adhesion may be secured in conjunction with a favourable distribution of weight on the rails. A four-wheeled bogie at the leading end would of necessity have meant an undesirable extension of the total wheelbase and sacrifice of adhesion, while it is doubtful whether a cylinder block of such proportions and so well planned could have been got in. As things are, with a two-wheel truck leading, there is sufficient room in which to locate the cylinders, although only by very careful planning has it been possible, with the large dimensions adopted, to accomplish this. The foremost pair of coupled wheels is brought close up to the cylinders and, in this case, with wheels 6 ft. 2 in. diameter, the engine wheelbase is kept within a total of 38 ft. As the illustrations show, the coupled wheels are left exposed, that is to say, uncovered by splashers. The springs of the engine are not equalised.

The boiler is generally similar in design to those of the Gresley Pacifics. It has a 43-element M.L.S. superheater, with Sinuflo (sine-waved) element tubes, affording a high degree of superheat, a feature of the design being that the return bends are brought to within 9 in. of the firebox tubeplate instead of 18 in. as heretofore. A new system of steam collection has been adopted. On the top of the boiler barrel there is a steam collector formed integrally with the dome. This is produced as a steel pressing riveted to the top of the boiler on the outside. Steam is admitted to the collector by means of a number of slots in the top of the boiler barrel, the object being to prevent water combining with the steam on the way to the regulator valve, which latter, together with the steam pipes, is of extra large size to ensure that the boiler pressure can be maintained in the steam chests. The main steam pipe is 7 in. in diameter, whilst the pipes located in the smokebox are of 5½ in. effective diameter. In order to reduce back pressure as much as possible a double blast pipe, with two chimneys, formed in a single casting, is utilised, similar in design to those employed on certain French locomotives. The arrangement is known as the K.C. blast pipe and was originally designed by Monsieur Chapelon of the Paris-Orleans Railway. The whistle is placed immediately in front of the chimney, and the steam supply pipe thereto connects with a combined valve for the anti-carboniser located in the smokebox. Alfol insulation has been used for clothing the boiler.

The boiler is fed by means of the A.C.F.I. system with pump, the latter being carried on the right-hand side of the engine, on the running board above the leading and

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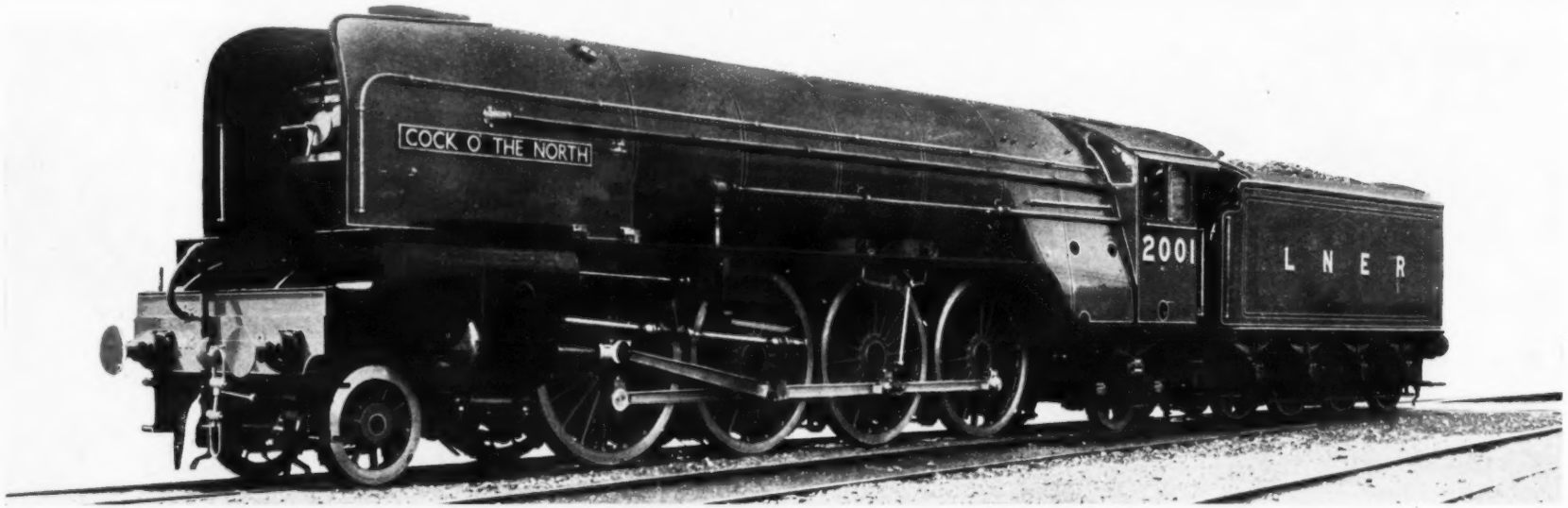
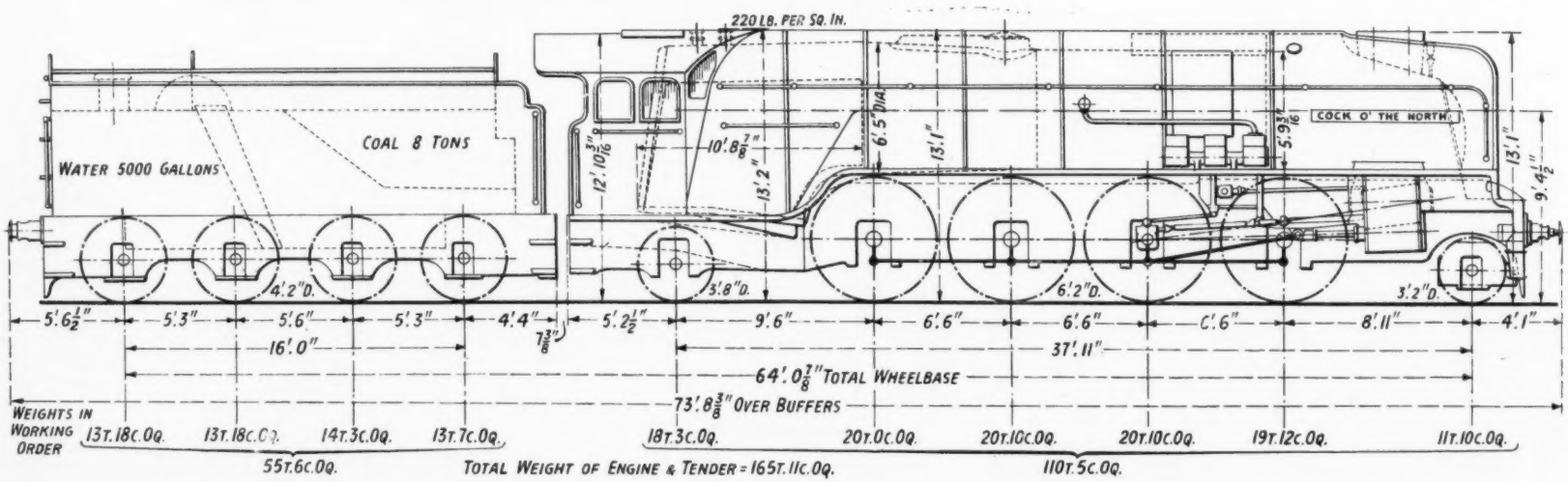
TABLE OF LEADING DIMENSIONS AND RATIOS

Cylinders—	
Number (3)	... 21 in. diam. by 26 in. stroke
Cylinder horse power	... 2,617
Wheels—	
Coupled, diam. ...	... 6 ft. 2 in.
Leading truck ...	... 3 ft. 2 in.
Trailing truck ...	... 3 ft. 8 in.
Wheelbase—	
Coupled, ...	... 19 ft. 6 in.
Engine, total ...	... 38 ft. 11 in.
Engine and tender ...	... 64 ft. 0⅞ in.
Axles—	Diam. Length
Journals, pony ...	... 6½ in. by 9 in.
Journals, coupled ...	... 9½ in. by 11 in.
Journals, trailing ...	... 6 in. by 11 in.
Crank pins—	
Outside	... 6¾ in. by 6 in.
Inside	... 9¼ in. by 6 in.
Coupling pins—	
Leading	... 4¾ in. by 4 in.
Driving	... 7¼ in. by 4½ in.
Intermediate ...	... 4¾ in. by 5 in.
Trailing	... 4¾ in. by 5 in.
Springs—	
Pony—	
Helical, 10⅜ in. long free 5½ in. outside diam., Timmis section	
Coupled wheels—	
Laminated, 3 ft. 6 in. crs., 15 plates 5 in. wide by ½ in. thick	
Trailing wheels—	
Laminated, 4 ft. 3 in. crs., 14 plates 5 in. wide by ⅝ in. thick	

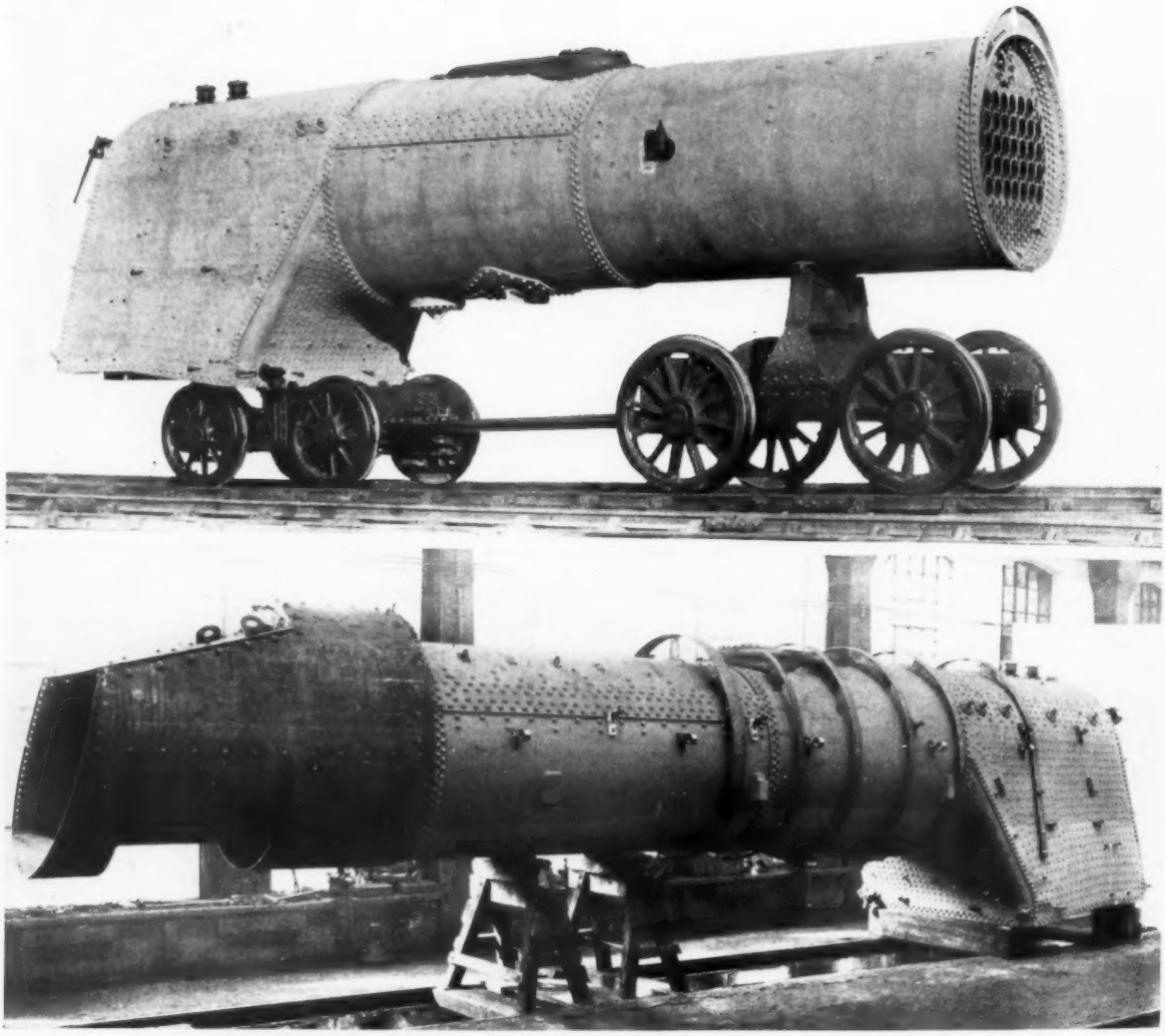
Boiler—	
Outside length firebox overall	... 10 ft. 8⅞ in.
Outside length firebox at bottom	... 7 ft. 11¼ in.
Outside width firebox at bottom	... 7 ft. 9 in.
Diameter of barrel, max.	... 6 ft. 5 in.
Length of barrel ...	... 19 ft. 0 in.
Thickness of barrel plates	... 11/32 in. and 3/8 in.
Thickness of wrapper plates	7/16 in.
Length of smokebox at bottom	... 8 ft. 11 in.
Tubes, small—	
Material	... Steel
Number	... 121
Diameter outside ...	... 2¼ in.
Thickness	... 10 I.W.G.
Tubes, superheater flue—	
Number	... 43
Diameter outside ...	... 5¼ in.
Thickness	... 5/16 in.
Length between tubeplates	18 ft. 11¾ in.
Heating surface—	
Firebox	... 237 sq. ft.
Tubes, 2¼ in. ...	... 1,354·2 sq. ft.
Flues	... 1,122·8 ,,
Total evaporative H.S.	... 2,714·0 ,,
Superheater—	
Number of elements	... 43
Diameter, inside ...	... 1 17/32 in.
Heating surface ...	... 635·5
Total heating surface	... 3,349·5
Two Ross pop safety valves	... 3½ in. diam.
Working pressure ...	... 220 lb./sq. in.
Boiler horse power ...	... 1,777

Grate—	
Length on slope ...	... 7 ft. 2 in.
Width	... 6 ft. 11¾ in.
Grate area	... 50 sq. ft.
Firebox—	
Height of crown above foundation ring—	
Front	... 6 ft. 8 11/32 in.
Back	... 6 ft. 0 5/32 in.
Interior length at top	... 9 ft. 2¾ in.
Interior width at boiler centre ...	... 5 ft. 4½ in.
Thickness of copper plates—	
Sides and back ...	... 9/16 in.
Tubeplate ...	... 9/16 in. and 1¼ in.
Weight—	
Engine in working order	... 110 tons 5 cwt.
Engine and tender, in working order	... 165 tons 11 cwt
Motion—	
Type—	... Rotary cam
Type of valves ...	... Poppet
Diameter of valves ...	
Steam	... 8 in.
Exhaust	... 9 in.
Cut-off in full gear	... 70 per cent.
Tractive effort at 85 per cent. boiler pressure ...	... 43,462 lb.
Total adhesive weight...	... 180,544 lb. (80 tons 12 cwt.)
Adhesive weight—	
Tractive effort ...	... 4·15
Vacuum brake.	

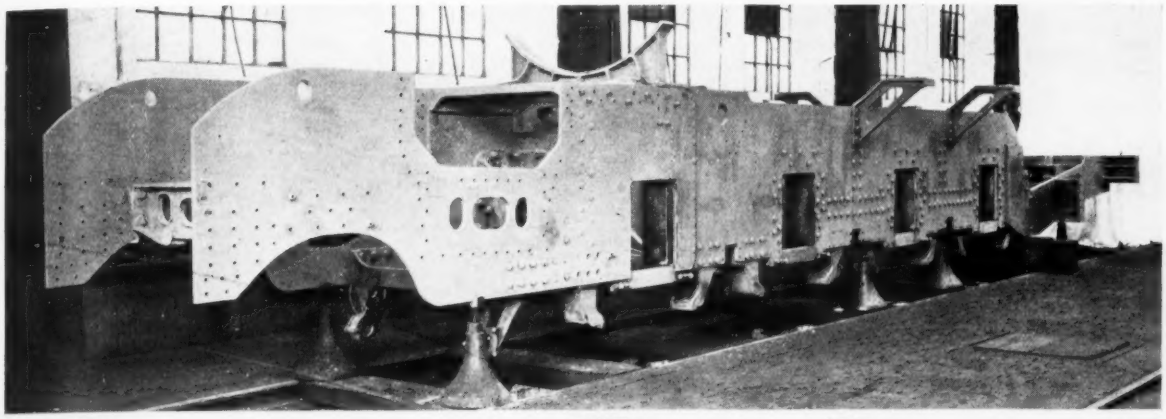


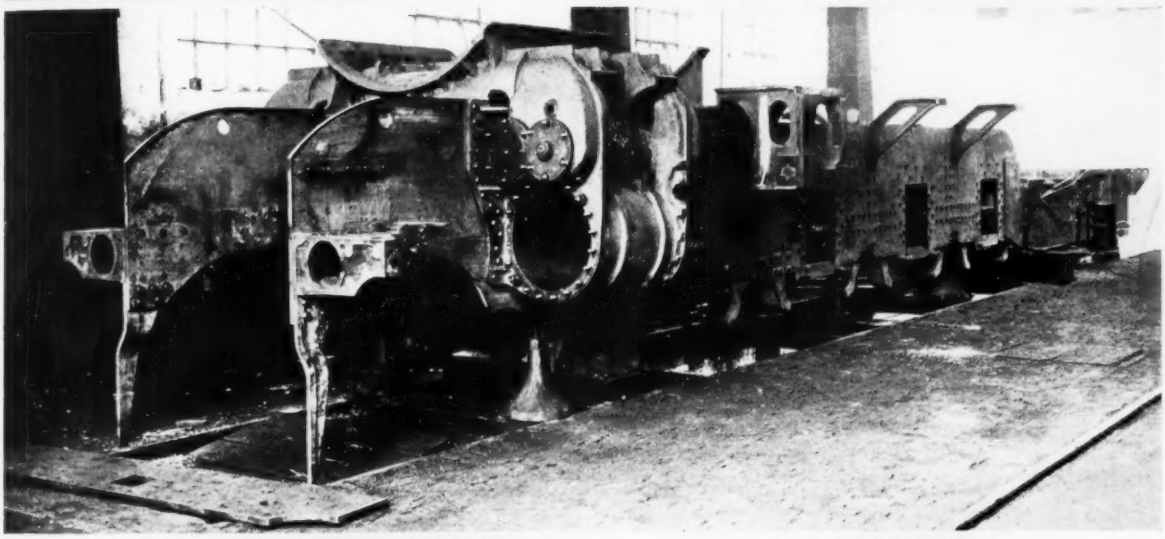


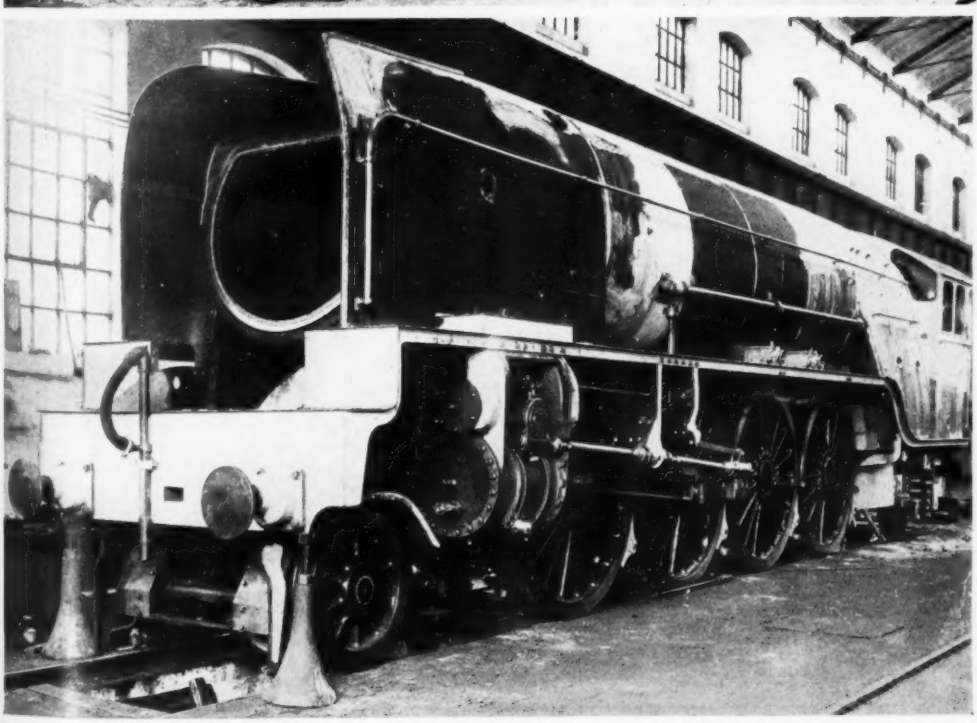
L.N.E.R. 3-cylinder 2-8-2 express locomotive. General view of locomotive and diagram drawing giving principal dimensions and axle loadings



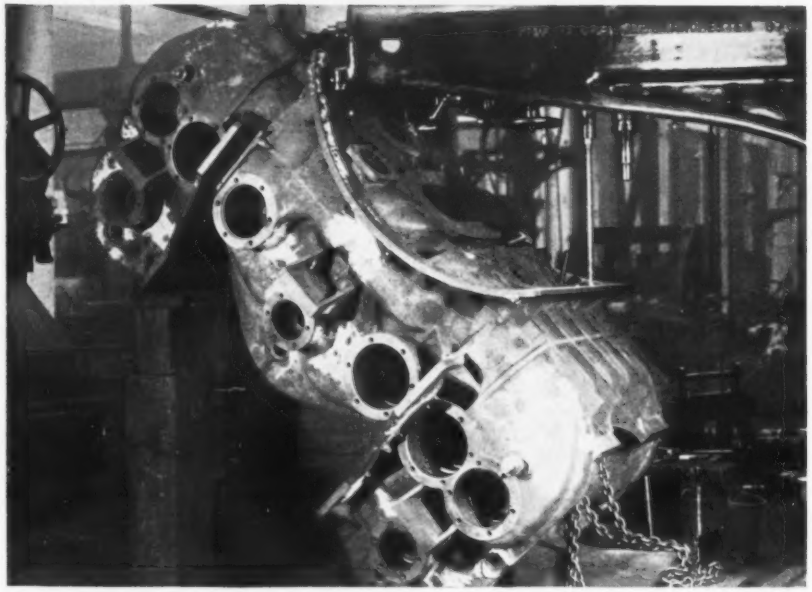
Boiler (top), with smokebox (centre), and Alfol insulating material lagging in position, mounted on frames (bottom). Note eccentrically mounted lagging rings



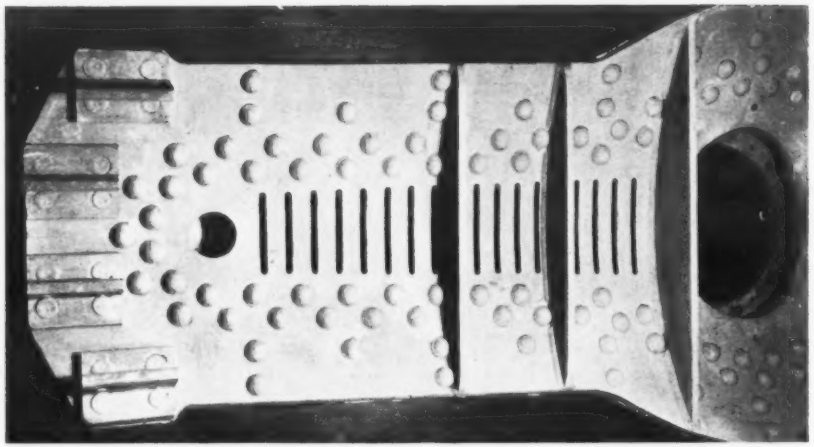




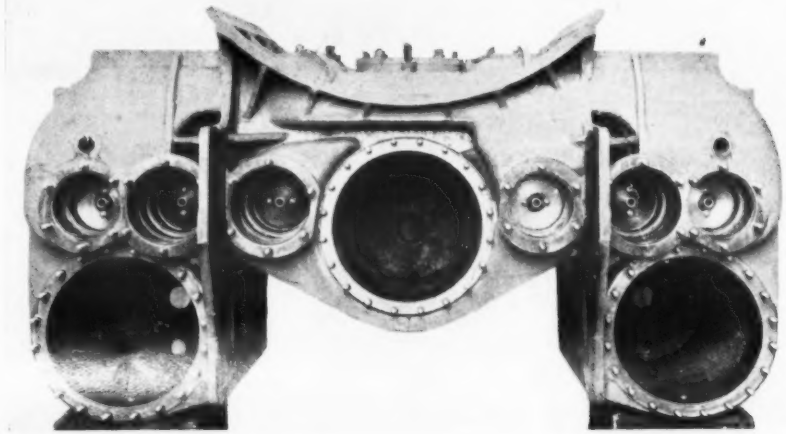
Successive stages in erection of new locomotive: The main frames (top), with cylinders and smokebox saddle casting in position (centre), and finally, almost completely erected with boiler, wheels, motion, cab, &c., assembled



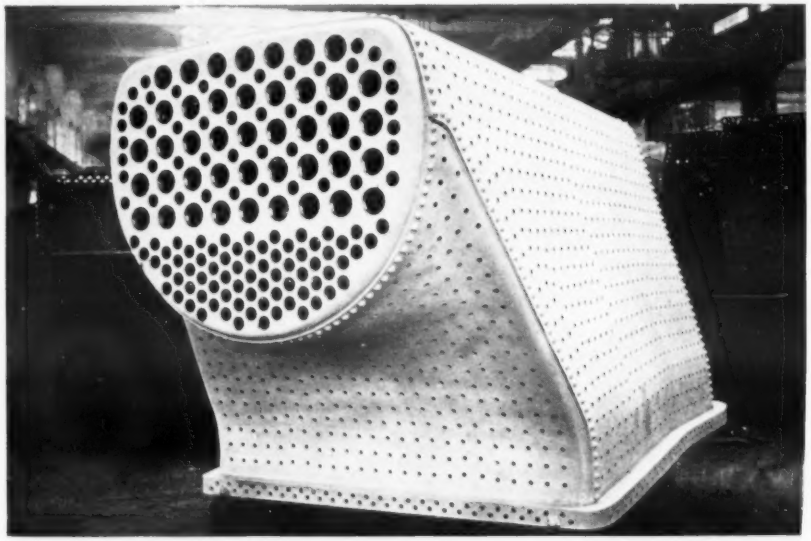
Method of drilling smokebox saddle



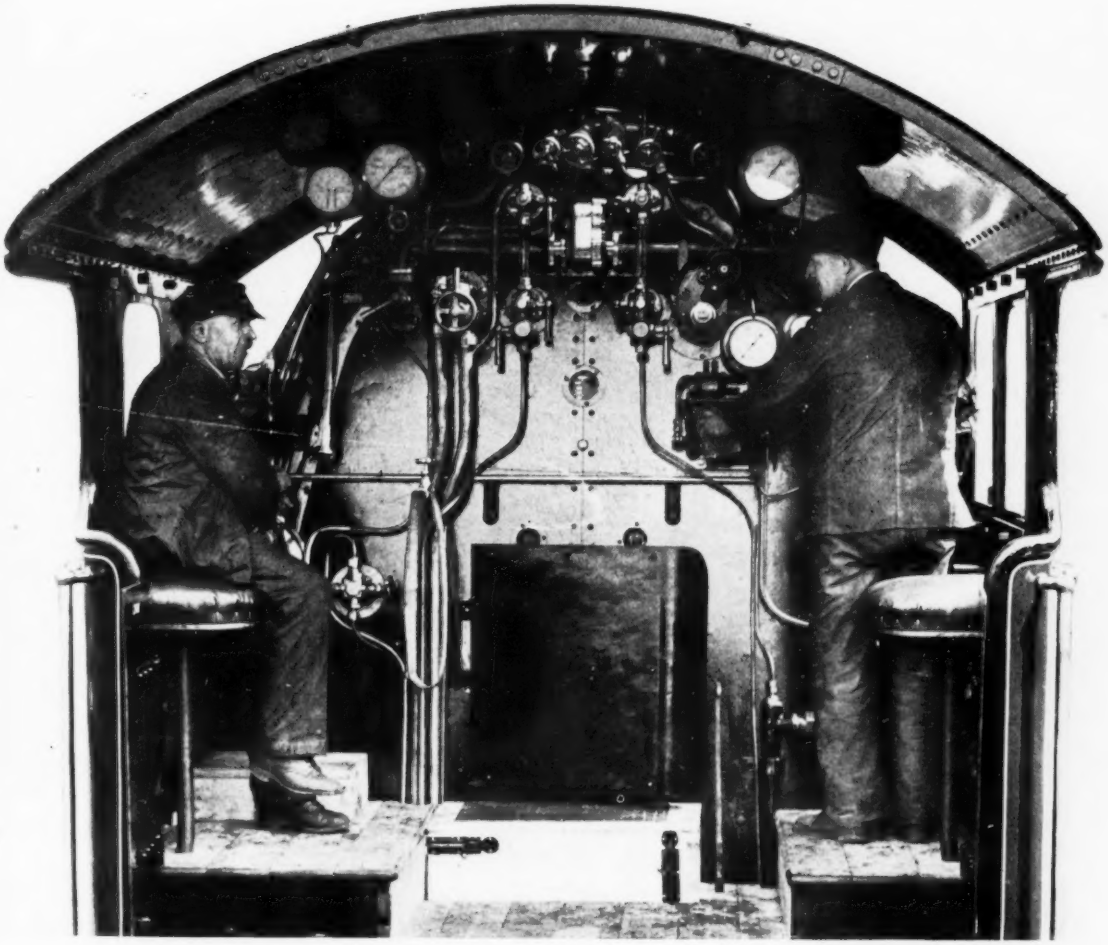
Underside of steam collector and dome, showing the slots through which the steam passes



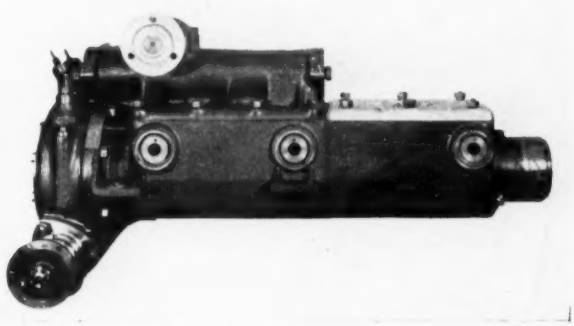
Monobloc three-cylinder casting complete with smokebox saddle



Inner firebox, showing 43 element tubeplate



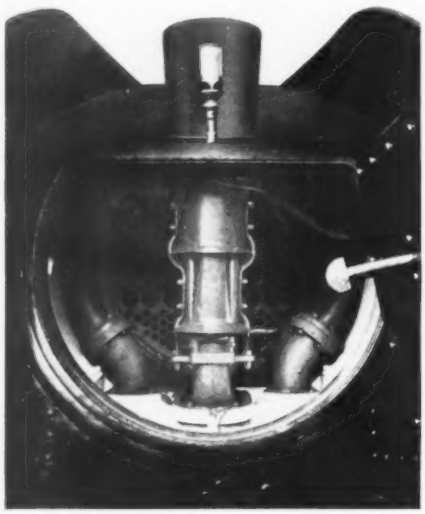
Footplate view, showing interior of cab and fittings. Note convenient arrangements for enginemen



Above: Cam-box for R.C. poppet valve gear: left-hand side of engine

Left: View along top of boiler, showing steam dome and collector and A.C.F.I. feed-water tanks

driving pairs of coupled wheels. The tanks for this apparatus are located under the lagging at the forward end of the boiler barrel. The firebox is of the wide pattern and of increased length as compared with the Pacific firebox. It provides 50 sq. ft. of grate area. The smokebox is also increased in length, and on inspection we found it to be not only capacious but very simple as regards the laying of piping, &c. The shape of the wing plates and the top of the smokebox were determined by wind tunnel experiments carried out at the City & Guilds (Engineering) College. It ensures that the steam and smoke shall be thrown clear of the cab at all speeds. The boiler carries a working pressure of 220 lb. per sq. in. and two 3½ in. diameter Ross patent pop safety valves are fitted. The front of the cab is vee shaped, and this has enabled larger spectacle glasses to be fitted, giving the enginemen an improved look-out. Both driver and fireman are provided with comfortable leather-covered seats, and on the driver's side all controls are within easy reach of the driver whilst seated. The sandboxes have been arranged in very neat fashion alongside the smokebox inside the sheathing plates, easy access to them being secured by balanced chutes. The location of these can be seen from the illustration of the complete engine.



Interior of smokebox, showing piping and KC. blast-pipe

Adequate lubrication of the cylinders and axleboxes is assured by two Wakefield mechanical lubricators mounted on the left-hand side of the engine. These are operated by a neat and simple linkage system driven by a return crank from the third pair of coupled wheels, the joints being fitted with roller bearings. The arrangement may be expected to achieve its purpose with accuracy and reliability. The trailing wheels, *i.e.*, those of the truck below the cab, are fitted with Cortazzi axleboxes.

The tender is of the same design as that fitted to the Pacific class engines. It is of the high-sided eight-wheeled non-bogie pattern equipped with a well-tank, and carries 5,000 gallons of water and 8 tons of coal. A saving in weight has been effected by resorting to welding for the construction above the framing. The locomotive weighs in working order 110 tons 5 cwt., of which 80 tons 12 cwt. are available for adhesion. The tender weighs 55 tons 6 cwt. in working order, the combined loading of the engine being thus 165 tons 11 cwt. A diagram which Mr. Gresley showed us and on which only estimated weights were given prior to the building of the engine, demonstrated how very close to the actual figures the weights had been calculated. Only a matter of a few hundredweight separated the estimated from the actual weight. Additional to the fittings already mentioned are a steam-chest pressure gauge, pyrometers, and the Teloc speed indicator and recorder.

An editorial article on the subject of the new locomotive will be found on page 958 of this issue.

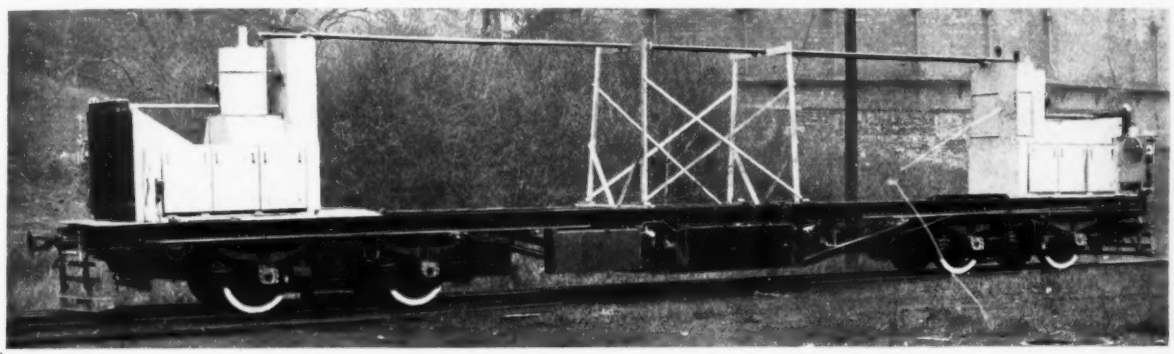
The Flying Hamburger (left) and the new express steam railcar for Lübeck (right) alongside in Hamburg station

(*See page* 964)

NEW PETROL RAILCAR FOR SOUTH AFRICA

300 h.p. Drewry unit with two 150 h.p. engines for the South African Railways 3 ft. 6 in. gauge lines

IN THE RAILWAY GAZETTE for February 10, 1933, there appeared a description of a standard gauge locomotive supplied by the Drewry Car Co. Ltd. to the Bermuda Railway and driven by two petrol engines through two preselective epicyclic gearboxes. A railcar underframe similar in many respects to that of the above mentioned

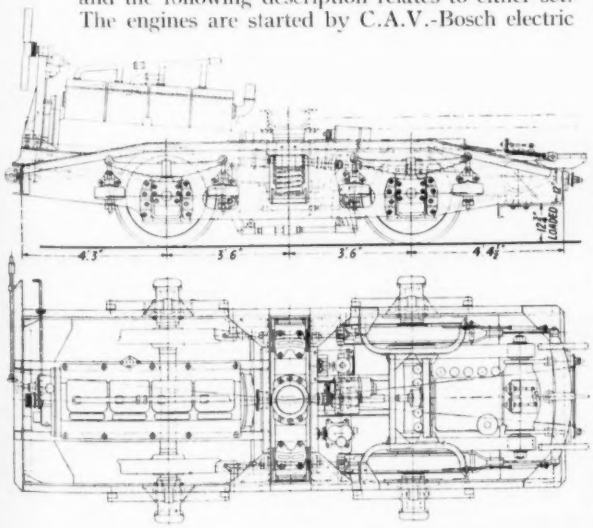


Side view of underframe as delivered

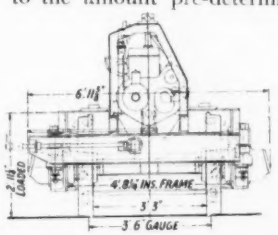
locomotive has now been completed for the South African Railways. Constructed like other recently supplied Drewry units at the Preston works of the English Electric Co. Ltd., it was put through some preliminary tests on the 3 ft. 6 in. gauge track at these works. Our illustrations show the unit previous to its delivery. No body was provided as one of South African construction was available. During the tests at Preston a load was made up out of rolled steel girders and other material available at the works.

Arrangement and Operation of Controls

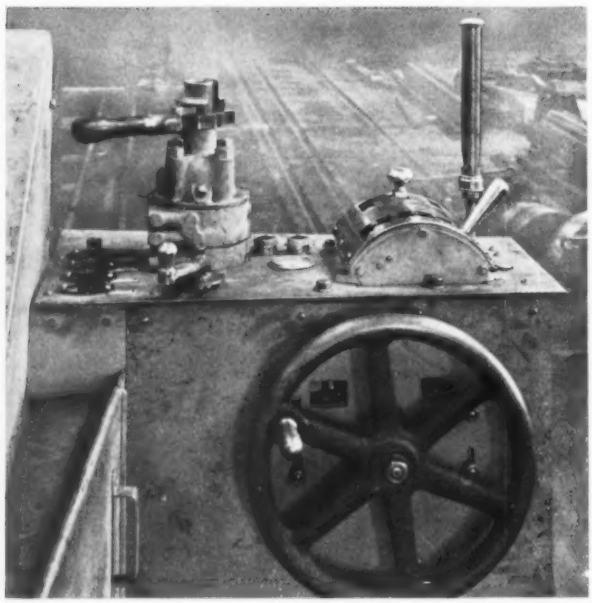
Driving controls are provided at each end of the vehicle and the following description relates to either set. The engines are started by C.A.V.-Bosch electric starters, there being a push-button at the left hand for each. The button for the remote engine is pushed first in order that its starting may be audibly noted. Similar buttons are provided for the two ignition systems. Throttle control is effected in both engines simultaneously by a lever manipulated with the left hand. This lever turns about a vertical axis like that of a tram controller, but it projects towards the driver and is moved to the right to open the throttles. As the new railcar is to pull a trailer also provided with driving controls, the direct mechanical connection of the throttles and throttle levers has been abandoned in favour of pneumatic connection. The throttles are actuated by what are in effect small spring-loaded pistons which give an opening proportional to the air pressure in the corresponding cylinders. Actuation of a throttle lever admits air to these cylinders by displacing a piston type of valve. As the connection between this valve and the operating lever is made elastic by the interposition of a spring, the valve is self-lapping, *i.e.* it closes when the difference between the pressures on its two sides has fallen to the amount pre-determined by the throttle lever displacement. The details of this throttle control were supplied by the Westinghouse Brake & Saxby Signal Co. Ltd., and the connections are simple, there being inlets from the train pipe to each control valve, and a single pipe from each control valve to the throttle-actuating cylinders, which have a pipe running between them. We saw for ourselves that the time lag between the control lever and the throttles was small and that there was no appreciable lost motion.



General arrangement of power bogie



The change speed mechanism has been simplified by the omission of the strut selecting camshaft used on the previous gearboxes. In the new box the struts are pushed forward against springs by small air-actuated pistons. Air is admitted behind these pistons by electromagnetically controlled valves, one such valve being provided adjacent to each strut-operating cylinder. Similar valves are provided adjacent to the busbar operating and reverse dog control cylinders. The gear preselection and engagement



One of the two control panels

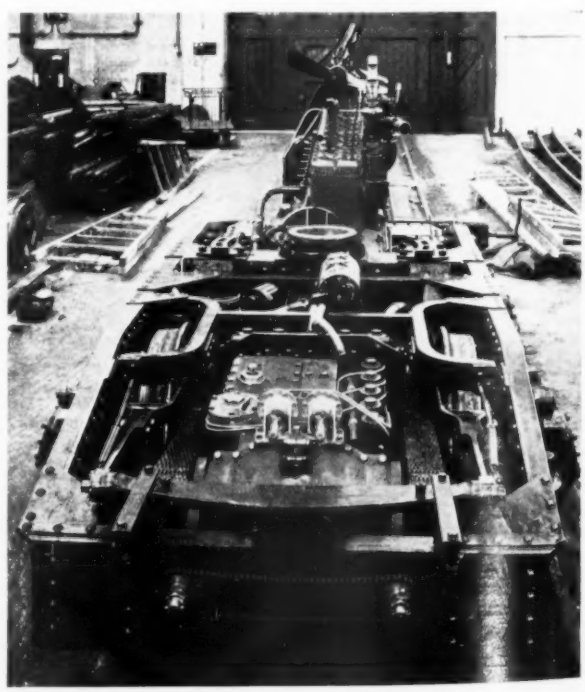
lever at the driver's right hand is moved from the left or neutral position into the next notch on the right for starting. The lever must be pushed forwards about half an inch against a spring before it can be moved sideways along the gate into this notch. The following is a description of what happens inside one gearbox, but it is to be understood that manipulation of the preselector lever operates two gearboxes simultaneously. Shifting the lever into the first position energises the magnet admitting air to the first strut cylinder and the corresponding strut is pressed against the edge of the busbar. Movement of the preselector lever across the gate into a notch in front admits air in the same way to the busbar cylinder so that the busbar is at once depressed. This allows the first gear strut to engage. Release of the preselector lever allows the air to escape from the busbar cylinder so that the busbar rises under the influence of a strong spring and tightens the band brake for the first speed. The driver has no control over this rising of the busbar so that, no matter what he does, the gear is rendered operative without shock. The throttle is opened as the preselector lever is released, and, when the vehicle commences to move, the preselector lever is shifted to the right until it engages in the next notch. The second speed strut is now pressed against the busbar and the first speed strut is relieved of piston pressure and thus put in readiness to swing clear of the busbar under the action of its spring as soon as the busbar is depressed. The change up into second gear is effected when sufficient speed has been reached in first gear. The preselector lever is pushed forward and the throttle is closed to prevent the engines from racing. Releasing the preselector lever after a short pause (to give the first speed strut adequate time for disengagement), and opening the throttle, establishes operation in second speed. Third, fourth and fifth speeds are secured in the same way as second, while a change down is made just as easily.

The output shaft of the epicyclic gearbox carries a bevel wheel in constant mesh with two loose wheels on the cross or final drive shaft. A double-ended dog sliding on the latter shaft between the loose wheels, but forced to turn with it, establishes forward or reverse drive by engaging with one or other of the loose wheels, and the fork actuating this dog is operated by opposed diaphragm type air cylinders. Supplying air to one cylinder engages the forward bevel and supplying it to the other engages the reverse bevel. The control for these cylinders is in front of the preselector lever on the driver's panel, and it can only be actuated by the preselector lever, which is detachable for this purpose. Before this lever can be withdrawn it must be returned to the neutral position. Neutral is not only selected but actually engaged by the operation of detaching the preselector lever, for, owing to the provision on this lever of a special lug, it must be pushed forward before it can be lifted out of its socket. After the preselector lever has been used to move the dog control for forward or reverse running, it is withdrawn and its place is taken by a plug inserted to lock this control. Isolation of either power bogie from the controls can be effected by opening a switch on the bogie itself. This interrupts the electrical connections between the gear and reversing control contacts and all the electromagnetic air valves on that bogie. As an additional safeguard against unwanted movements, the external arm operating the bevel selecting dog can be locked in the mid-position by the manual insertion through it into the gear casing of a substantial screw.

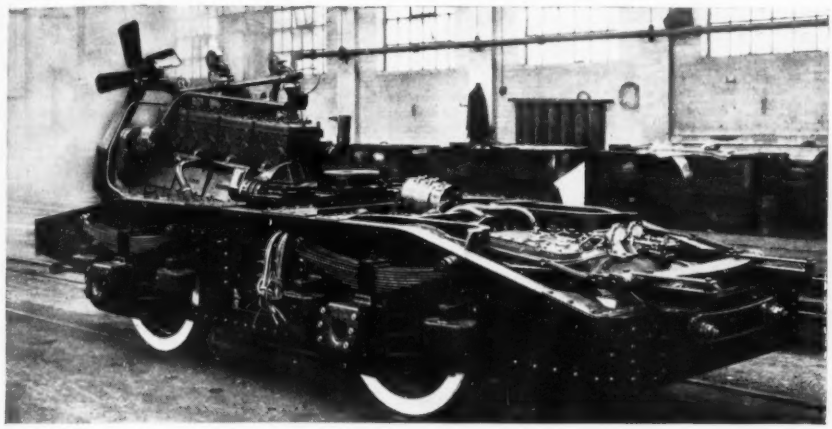
We were afforded an opportunity for driving the new underframe on the works track, and were impressed by the extreme ease with which we were able to control simultaneously the two engines and their five-speed gearboxes. Skilful and intelligent drivers such as are difficult to obtain in some parts of the world would not appear to be necessary where Drewry units are employed.

Engines and Transmissions

Each power bogie is provided with an M 8 type Parsons petrol engine having eight $4\frac{3}{4}$ in. × 6 in. cylinders in line, and giving 150 b.h.p. at 1,650 r.p.m. The governed speed is 1,850 r.p.m. and the corresponding output is 165 b.h.p. The carburettors are of the Zenith down-draught pump type and are fitted with Simms Vortex air



Rear view of one of the power bogies



Three-quarter view of one of the power bogies, detail drawings of which are reproduced on page 975

cleaners. Fuel is taken by gravity from small float chambers above the engines and these chambers are supplied, through gauze filters, from the main tanks, which are each of 60-gallons capacity. As the latter are at a lower level than the float chambers, the fuel in them is subjected to a small air pressure. The cooling water is circulated by Gwynne centrifugal pumps. Each power bogie has one of these pumps and the drive is by a chain from the shaft between the engine and gearbox. A Spiral Tube radiator, and a fan driven by a V-belt, is provided at each end of the vehicle, but the engine cooling circuits are interconnected so that the engine near the radiator which is masked by the trailer is in no danger of running at a higher temperature than the other. In each power bogie, flexibility in the drive between engine and gearbox is provided by Hardy Spicer couplings and the final drive from the gearbox cross shaft to the driving axle is by means of two Morse inverted-tooth silent chains. In order to bring the axis of the cross shaft down to approximately the same level as that of the driving axle, and so minimise the amount of chain slack needed to accommodate vertical movements of the axle, the engine and transmission have been inclined at an angle of four degrees. The gearbox can be moved longitudinally for chain adjustment, and true parallel motion is ensured by coupling the adjusting screws together through a small roller chain. This chain can be seen very clearly in the rear view of one of the bogies. Each engine may be started by hand from the side of the bogie, and this is facilitated by the provision of trip starters on the magnetos, which are of B.T.H. manufacture with automatic ignition advance. Energy for operating the electro-magnetic control valves and for lighting is taken from a 24-volt 286 ampere-hour nickel iron accumulator of Stone manufacture. This is charged by Simms dynamos with constant voltage regulators. One dynamo is provided for each power bogie and is driven by a chain from the shaft between the engine and gearbox. Driven by chain from the same shaft on each bogie is an E 13 Westinghouse air compressor, for brake, electro-pneumatic control, and petrol air pressure servicing. As in the units for the Bermuda Railway, the change speed and reverse box was designed by Improved Gears Limited, and its manufacture was undertaken by the E.N.V. Engineering Co. Ltd.

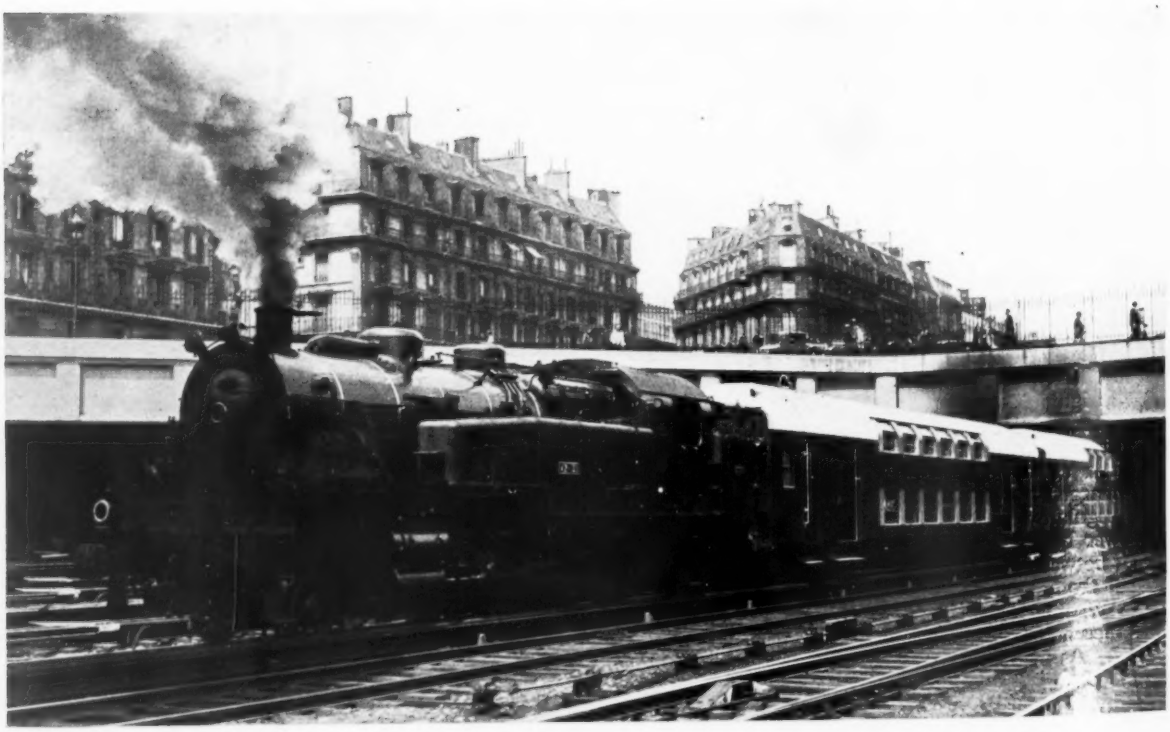
The power bogies are of the swing bolster plate frame type with standard South African Railway axleboxes. Spencer Moulton rubber buffers are used in the spring-hangers and the braking follows normal railway practice. The underframe is provided with standard drawgear, and is 61 ft. long over the buffers by 7 ft. 2 in. wide over the solebars. Its weight in running order is 23 tons 10 cwt., and the weight imposed on it by the loaded body is 14 tons. The loaded trailer weighs 16 tons. These figures give power weight ratios of 8 h.p. a ton for the coach alone, and 5·6 h.p. a ton for coach and trailer. The overall engine to driving wheel gear ratios are 35, 13·8, 7·85, 4·95 and 3·33 to 1, the final chain drive giving 3·33 to 1. The wheels are 2 ft. 10 in. in diameter on tread, so that the corresponding vehicle speeds at an engine speed of 1,650 r.p.m. are 4·75, 12·2, 21·3, 29·6 and 50 m.p.h., while the tractive efforts are 15,800, 6,150, 3,520, 2,530 and 1,500 lb. With the trailer attached, the estimated performance (taking transmission efficiencies measured on previous vehicles of similar type, and allowing for loss of power consequent upon working at an altitude of 5,000 ft.) is 50 m.p.h. in fifth gear on the level, 20 to 21 m.p.h. on third gear on a 1 in 45 up-grade, and 11 to 12 m.p.h. in second gear on a 1 in 30 up-grade.

THE LONDON & BIRMINGHAM RAILWAY. — A hundred years ago to-day (June 1) the first sod of the London & Birmingham Railway was cut at Chalk Farm. The *Sunday Times* of May 25, 1834, recorded that tenders had been accepted for executing the first 21 miles of the line from London. Robert Stephenson, who had been appointed Engineer-in-Chief for the whole line at a salary of £1,500 per annum, reserved for his personal supervision about 9 miles from Camden Town, and divided the remainder into four districts, each under an assistant.

The first of the new D.H. Diana class 4-engined air liners in flight. Orders have been placed for machines of this type by Railway Air Services Limited for use on internal air lines

Paris suburban train of old four-wheel double-deckers, Eastern Railway of France

Modern all-steel suburban train, Eastern Railway of France



All-steel double-deck reversible train being pushed out of St. Lazare, Paris, French State Railway

RAILWAY NEWS SECTION

PERSONAL

Mr. W. Percy Deakin, Chief Mechanical Engineer of the Central Argentine Railway, sailed for England on May 16, on a combined business and pleasure trip.

Mr. Pietro Saccaggio, Technical Assistant to the General Manager, Buenos Ayres Great Southern Railway, left Buenos Aires for England on May 2. Mr. Saccaggio, who, as Chief Mechanical Engineer, was mainly responsible for introducing diesel traction on that railway, will combine business with pleasure during his visit to the United Kingdom.

Mr. E. P. Mallory has been appointed Assistant to the President of the Canadian National Railways.

Mr. A. Coveney, Purchasing Agent, Chief Stores Superintendent's Department, L.P.T.B., has, we understand, retired from the service.

The Gloucester Railway Carriage & Wagon Co. Ltd. announces that Mr. T. L. Squires has been appointed Manager of the company, Mr. William Redpath having relinquished the appointment of Managing Director, Mr. Squires has been Works Manager for the past 11 years.

Indian Railway Staff Changes

Mr. J. R. D. Glascott, C.I.E., Agent, Burma Railways, has been permitted to retire from Government service as from April 17.

Mr. A. Richardson, officiating Chief Mechanical Engineer, G.I.P. Railway, has been confirmed in that appointment as from April 28.

Mr. S. E. L. West, O.B.E., V.D., has been appointed to officiate as Divisional Superintendent, N.W.R., as from March 28.

Mr. L. N. Flatt, Officiating Chief Mechanical Engineer, E.B.R., has been granted eight months' leave as from May 25.

Sir Lingard Goulding, Bart., has been elected Chairman of the Great Northern Railway (Ireland), in place of Sir George S. Clark, Bart., who has resigned owing to ill-health. Mr. George E. Clark has been co-opted a Director of the company.

Mr. H. N. Gresley, C.B.E., M.Inst.C.E., M.I.Mech.E., M.I.E.E., M.Inst.T., Chief Mechanical Engineer, London & North Eastern Railway, who assumes office as President of the Institution of Locomotive Engineers for the second time on July 1, was educated at Marlborough and began his railway career at Crewe works, L. & N.W.R., where he served his apprenticeship under the late Mr. F. W. Webb. He was subsequently a pupil under Mr. (now Sir) John Aspinall at Horwich, L. & Y.R., and after varied experience, was placed in charge of the test room at those shops. He was next appointed Foreman of the two locomotive sheds at Blackpool and subsequently became Outdoor Assistant in the Carriage and Wagon Department. In 1901 he was posted as Assistant Works Manager at Newton Heath, was promoted Manager in the following year, and Assistant Superintendent of the department in 1904. A year later Mr. Gresley transferred his services to the G.N.R. as Carriage and Wagon Superintendent, which position he held until 1911, when he succeeded Mr. Ivatt as Locomotive Engineer at Doncaster. During his tenure of this office he did much to maintain the locomotive and rolling stock standards of the line in the forefront of British practice, and, by introducing his articulated bogie principle for coaching stock, as well as improved locomotive designs, ensured greater economy and improved efficiency. In 1923 he was appointed Chief Mechanical Engineer of the L.N.E.R., and has continued the policy of advance—his name being identified largely with locomotives of the three cylinder single expansion type having large superheated boilers with liberal grate areas and fireboxes—until to-day his latest production, the 2-8-2 express passenger locomotive, illustrated and described in this issue, is outstanding in its many remarkable features. Mr. Gresley was previously President of the Institution of Locomotive Engineers in 1927-28, is a Major in the Engineer & Railway Staff Corps, and for special services rendered during the war was made a C.B.E.

Photo by [*Lenare*

Mr. H. N. Gresley, C.B.E.,
M.Inst.C.E., M.I.Mech.E., M.I.E.E., M.Inst.T.,
Chief Mechanical Engineer, L.N.E.R.,
President-Elect, Institution of Locomotive Engineers, 1934-35

We regret to record the death on May 19, of Mr. R. T. McCallum, District Engineer, Derby North District, L.M.S.R. Mr. McCallum was born in 1882 and educated at Derby School and King's College, London, where he took his B.Sc. degree of London University. From 1900 to 1903 he was articled to the Chief Engineer, Midland Railway, subsequently being appointed Assistant to the Resident Engineer on the Nottingham widening, West Riding lines, Contract No. 1 Heysham Harbour, and also Assistant to the Northern Divisional and Western Divisional Engineers of the Midland Railway. During the war he enlisted in the Royal Fusiliers, was commissioned in the 1st London Division, Royal Engineers, and saw service in Gallipoli with a Field Company attached to the 29th Division, being subsequently invalided home and placed in command of the 1st London Division, Royal Engineers, on home service. He transferred later to the War Office, Roads and Bridges Branch, first as Officer, Southern Area, and then as Assistant Director, eventually being demobilised as Lieutenant-Colonel and awarded the O.B.E. (Military) for his services. Rejoining the Engineering Department of the Midland Railway, Mr. McCallum was, in 1923, appointed Chief Assistant to

the Northern District Engineer, Midland Division, L.M.S.R., Leeds, and in the following year Resident Engineer of the Longbridge and Barnt Green widening. In 1927 he became New Works Assistant to the Midland Divisional Engineer, and, in 1929, Assistant to the Divisional Engineer, Derby, continuing also to supervise construction works, including the Mid-Notts Joint Railway, Broadholme and Ambergate, and Barking and Upminster widenings, &c. It was in 1932 that he was appointed District Engineer, Derby North District. Mr. McCallum was a Member of the Institution of Civil Engineers and was awarded the Crampton Prize of the Institution for a paper on the demolition of Cofton tunnel (1930-31).

The late Mr. R. T. McCallum.

District Engineer, Derby (North), L.M.S.R., 1932–34

Mr. H. F. Lockwood, Chief Operating Superintendent of the North Western Railway, India, who, as announced in THE RAILWAY GAZETTE of April 20, has been granted leave preparatory to retirement, was born in 1879 and started his railway career on the old South Eastern Railway (England). There he served for five years in the offices of the Chief Auditor and of the Superintendent of the Line, until in 1904 he proceeded to India as an Assistant Traffic Superintendent on the former Southern Mahratta Railway, afterwards officiating as District Superintendent. In 1907 he entered the Indian State Railway service as an Assistant Traffic Superintendent, and was posted to the Eastern Bengal system, where he officiated as District Traffic Superintendent upon various districts. In 1912 he was transferred to the North Western Railway, and was confirmed as District Traffic Superintendent. Upon the introduction of the Divisional system on that line, Mr. Lockwood was appointed Officiating Divisional Superintendent in 1924, being confirmed a year later. In 1930 he was promoted to officiate as Chief Operating Superintendent, and was confirmed in that appointment in 1933. Whilst Divisional Superintendent at Karachi, he represented the railway as a Member of the Chamber of Commerce and as a Port Trustee.

Railway] [*Gazette*

Mr. H. F Lockwood,

Chief Operating Superintendent, N.W.R., India, 1930–34

Mr. G. P. Newell, who, as announced in THE RAILWAY GAZETTE of May 11, has lately retired from the position of Secretary to the Local Committee of the Central Argentine Railway, began his career with the Midland Railway (England), which he joined as a junior clerk in 1881. In 1890 he went out to Buenos Aires, where he was engaged in the Traffic Department of the Buenos Ayres & Rosario Railway, and two years later was transferred successively as Private Secretary to the Acting Manager and Chief Clerk in the General Manager's Office. It was in 1897 that he was appointed Secretary to the Local Committee. On the fusion in 1902 of the B.A. & Rosario and Central Argentine Railways, his appointment as Local Secretary of the amalgamated companies was confirmed, and in 1906 he was made one of the chief officers.

Mr. G. P. Newell,

Secretary to the Local Committee, Central Argentine Railway, 1902–34

Beyer-Garratt locomotive No. 901 in service on the 3 ft. 6 in. gauge Nigerian Railway, hauling a goods train of 850 tons on track laid with 45 lb. per yard rails. This locomotive, which exerts a tractive effort of 40,000 lb., is the largest steam engine in the world working over so light a section of rail, and the matter is of interest in view of the correspondence which has appeared in our pages under the title of "Safe Speeds and Axle Loads on Colonial Narrow Gauge Railways," initiated in our issue of April 13 by Mr. G. V. O. Bulkeley, General Manager of the Nigerian Railway

Ten Years of the Austrian Federal Railways

Ten years ago last year the organisation known as the Austrian Federal Railways was set up to work the railways of the Republic of Austria, themselves part of the old State and semi-State lines of the former Austro-Hungarian monarchy. This arrangement was made to improve the system of financing and working, a very necessary measure, owing to the difficult situation brought about by the war and the treaties which concluded it. The war had left the railways with their permanent way and rolling stock nearly worn out. For a long time only essential maintenance work, dictated primarily by military considerations, had been undertaken, a marked contrast to the situation obtaining in pre-war days, when Austria was reputed for its well managed and well maintained railway system. The altered frontiers created by the Peace Treaties completely changed the conditions under which the new Austrian lines were required to work, the main current of traffic being shifted from the north-south to the east-west direction, converting the railways into through transit lines rather than a compact network serving a unified political and industrial territory. Many of the old industrial areas of the monarchy were excluded from the new republic, and this, combined with the general institution of tariff walls, profoundly affected the fortunes of the railways in the new Austria.

Reorganisation of Rolling Stock

It was not until 1925 that the distribution among the newly created States of the rolling stock belonging to the pre-war systems was completed, but, this done, the work of re-organisation in Austria was at once begun. The number of locomotives and railcars left to Austria at that time was 3,278, of which 940 have already been scrapped, while 482 have been rebuilt or replaced. Moreover, 1,534 passenger and parcels vehicles and 10,000 freight wagons have been scrapped, the figures for new and rebuilt vehicles being 1,325 and 6,285 in these two classes respectively. To carry such a programme through it was necessary to reorganise the workshops, nine being closed and the principal one put under the Vienna district management. This resulted in an increase of 26 per cent. in the work turned out—comparing the years 1924 and 1929—with 21 per cent. less staff. Unfortunately, further reductions in staff have since had to be made, and the quantity of work done has declined considerably, in consequence of the general depression. A locomotive rebuilding programme, which had been drawn up under the previous administration, was pushed forward energetically, and steps were taken to improve the thermal efficiency of main-line locomotives. Compounding gave place to simple expansion working, combined with superheating, the use of the Lentz valve gear and feed water heating.

Railcars and Push-and-Pull Trains

The scrapping of so many old steam locomotives made it necessary to build a number of new ones for shunting and working the branch lines. More than 40 railcars were put into service on lines with light traffic and ten fast high-powered cars of the Daimler type were introduced on part of the main line. To meet acute road competition on certain sections of line near Vienna, serving spas and pleasure resorts along the river, a number of two-car and four-car push-and-pull trains, with the locomotive in the centre, have been put to work in the last few years with considerable success. Terminal working is much simplified by their use. They will, however, probably give place to railcar services in due course, or be supplemented by them.

The standardisation of passenger coaches was put in hand in order to effect savings by the interchangeability of parts, the appointments being much improved at the same time. Thirteen km. of upholstery material were used in this work, which was rendered essential by the high standard of comfort of competing road vehicles. Special attention was directed to economy in brake shoes on freight wagons, the hilly nature of the country making this an important item in running costs.

Civil Engineering Works

The altered traffic conditions on many routes, occasioned by the new frontiers, has necessitated a large amount of civil engineering work. Many new frontier stations, with their special equipment, have had to be built, while the electrification of the western sections of the system has required the enlargement of other stations. Extensive works have been carried out at Linz, Innsbruck, Kufstein, and Bludenz.

In Vienna, too, where there were formerly several stations, changes have been made, as already described in our columns, and Graz station has been rebuilt. The conversion of some double lines to single where traffic has declined has also been carried out, involving extensive signalling alterations. Power signalling has been adopted at several important stations.

A large number of level crossing warning signals have ben put in and over 1,200 crossing barriers abolished. About the same number of bridges have been renewed or strengthened since 1923 and 2,400 Km. of track relaid. Snow sheds have been extended and many new dwelling houses for the staff have been built. A special permanent way depot has been established at Wörth, where scrap material is used up in the manufacture of rail spikes and other articles, this practice leading to appreciable savings. A special purchasing department has been set up, controlling the expenditure of 115,000,000 schillings annually, and in 1932 it dealt with, among other things, some 1,300,000 tonnes of coal, 1,200,000 sleepers, over 500,000 cu. m. of ballast and 18,000,000 litres of oil.

Electrification

The electrification of part of the Tauern line has been begun, a work which will give much needed employment and increase the amenities of travelling on the line. A section of this work was opened on December 15. Great efforts have been made of late years to popularise Austria as a tourist resort, although political circumstances have lately had a somewhat adverse effect on this traffic.

The Financial Position

The general position in 1933, after all these praiseworthy efforts, was unfortunately far from satisfactory, the total deficit amounting to about 130,000,000 schillings, and even if the actual railway accounts can be improved by the State assuming part of the burden, the difficulty cannot be removed thereby. Any improvement in the economic situation of Europe generally would, of course, be felt in Austria, but rates cannot now be raised there to any great extent. The problems facing the management to-day would appear to admit of no immediate solution, and indeed in neighbouring countries the position is much the same as in Austria, if not worse. The losses from the decline in passenger traffic are most serious, notwithstanding reductions in working expenses, and it is admitted that many of the present fares are definitely uneconomic. Nevertheless, during the ten years of its existence the management has achieved great things in more than one direction. Its chief troubles have been due to financial conditions for which it is not responsible, and which have adversely affected the economic life of every country.

EUROPEAN FEDERATION OF ENGINEERING ASSOCIATIONS.—In THE RAILWAY GAZETTE of April 13 we recorded the inauguration at Rome of a new federation of engineering associations and its aims. The title of the federation has now been decided, and is as follows :—Fédération Européenne des Associations des Ingénieurs, or FEDAI for short, our equivalent being European Federation of Engineering Associations. The headquarters, for the time being, are at the offices of the National Fascist Syndicate of Engineers, Via Vittorio Vento, 7, Rome. Dr. Ing. Del Bufalo, President of the Italian Federation of Engineers, is the President of the new federation.

High Speed in Germany

(*See editorial note on page* 955)

In the April 6 issue of THE RAILWAY GAZETTE a brief review was given of the principal changes which were to be brought about on the introduction of the summer train services in Germany on May 15. Examination of the time-tables makes it possible to set out in detail the fastest schedules now operating on the main lines of the German State Railway, and the aggregate mileage which is booked to be covered at high speeds. In the first table a comparison is made of the number and mileage of high speed runs in Germany

GERMAN STATE RAILWAY. NUMBER AND MILEAGE OF HIGH SPEED RUNS, 1931–1934

Year	65 m.p.h. and over	62 m.p.h. and over	60 m.p.h. and over	58 m.p.h. and over
1931 ..	—	—	—	30 (1)
1932 ..	—	—	—	387 (3)
1933 ..	534 (3)	712 (4)	712 (4)	814 (6)
1934 ..	1,231 (8)	1,909 (14)	2,920 (25)	5,337 (62)

Figures in brackets show the number of runs making up each aggregate.

in the years 1931, 1932, 1933, and 1934 respectively. In 1931 the first 58 m.p.h. run in German annals had been introduced; in the subsequent three years this single example has grown to 62 runs, totalling 5,337 miles. Last year there were four runs, totalling 712 miles, booked at 60 m.p.h. and over; this year the number so booked is 25, and the total mileage 2,920. Eight runs are now scheduled at over 65 m.p.h. from start to stop, of which only two—those of the Flying Hamburger, which head the list—are made by railcars, the remainder being all steam-operated. Further, as was mentioned in the article to which we have referred, this is only a beginning, for next year will witness the widespread introduction of diesel railcars on all the principal German main lines, when scheduled speeds of over 70 m.p.h. will become common.

In the second table there are set out all the runs which are booked at speeds of a mile-a-minute and over. These are principally on the routes from Berlin (Lehrte Bahnhof) to Wittenberge and Hamburg; Berlin (Friedrichstrasse and Zoological Garten Bahnhof) to Hannover, Hamm, and Cologne; and Berlin (Anhalt Bahnhof) to Halle and Leipzig. In addition to these, well over one hundred runs are booked at speeds between 55 and 58 m.p.h. in all parts of Germany, over the routes already mentioned, and on the main line from Berlin (Schlesischer Bahnhof) to Königsberg, Berlin (Potsdamer Bahnhof) to Magdeburg, and elsewhere. It will be seen that the majority of the runs timed at over 60 m.p.h. are made by "FD" class express trains, with a supplementary fare; many of the "D" class trains, however, with a smaller supplementary charge, are booked at speeds upwards of 55 m.p.h., over certain routes having a number of such bookings in succession. As regards individual trains, the 15.58 from Berlin (Zoo.) makes a run at 60·7 m.p.h. to Hannover, followed by another at 64·5 m.p.h. to Hamm; the 60·4 m.p.h. journey of the Hook of Holland boat express from Osnabrück to Hannover is followed by a run at 65·8 m.p.h. to Berlin (Zoo.); and the principal FD service from Munich to Berlin begins with a run at 61·7 m.p.h. to Nuremberg, and finishes with a 64·8 m.p.h. schedule from Halle to Berlin

As regards complete services, that between Berlin and Hamburg leads the way in speed, with 12 trains daily, six in each direction, timed at a general average of 60·0 m.p.h. westbound and 58·0 m.p.h. eastbound, or 59·0 m.p.h. for the whole series. Four of the trains are non-stop, but the others make from one to four stops, all of which are included in the average. Between Berlin and Halle there are 22 daily expresses at a general average of 55·6 m.p.h.; between Berlin and Leipzig twenty averaging 53·8 m.p.h.; and between Berlin and Hannover the fourteen principal trains, 7 each way, average 170 min. for the journey of 157·8 miles, or 55·7 m.p.h. This year's acceleration programme in Germany is probably the most revolutionary that the world has yet seen carried out at one single operation on so immense a scale.

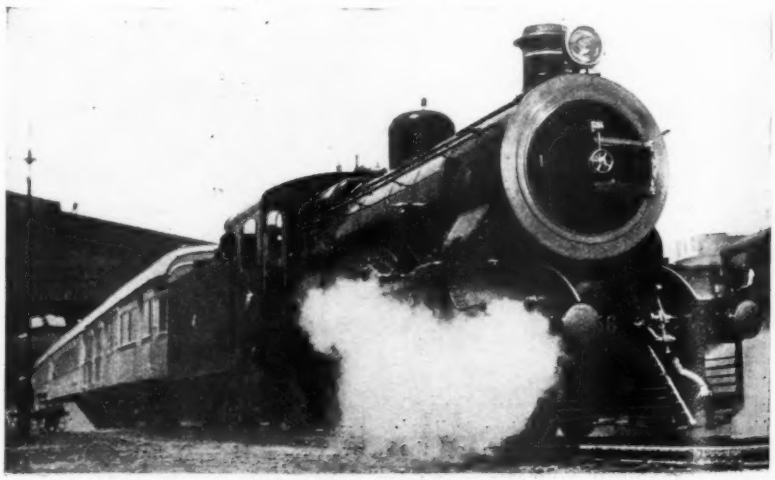
GERMAN STATE RAILWAY. RUNS AT 60 M.P.H. AND OVER FROM START TO STOP; SUMMER, 1934

From	To	Train	Distance	Time	Speed	Class
			miles	min.	m.p.h.	
Berlin (Lehrte)	.. Hamburg	11·00	178·1	138	77·4	†FD
Hamburg	.. Berlin (Lehrte)	15·16	178·1	140	76·3	†FD
Berlin (Lehrte)	.. Hamburg	18·07	178·1	154	69·4	FD
Hamburg	.. Berlin (Lehrte)	7·25	178·1	157	68·1	FD
Hannover	.. Berlin (Zoo)	13·42 / 20·47	157·8	148	65·8	FD
Berlin (Anhalt)	.. Halle	10·50	100·4	92	65·5	FD
Leipzig	.. Berlin (Anhalt)	19·31	102·2	94	65·2	FD
Halle	.. Berlin (Anhalt)	18·09	100·4	93	64·8	FD
Hannover	.. Hamm	18·41	109·6	102	64·5	FD
Berlin (Anhalt)	.. Halle	17·10	100·4	94	64·1	FD
Halle	.. Berlin (Anhalt)	11·56	100·4	94	64·1	FD
Hannover	.. Berlin (Zoo)	15·27	157·8	152	63·3	FD
Hannover	.. Hamm	11·26	109·6	106	62·0	FD
Munich	.. Nuremberg	12·10	123·3	120	61·7	FD
Lehrte	.. Gardelegen	12·59	63·2	62	61·2	D
Berlin (Zoo)	.. Hannover	14·00	157·8	155	61·1	FD
Dobrilvgk	.. Berlin (Anhalt)	18·55	63·9	63	60·9	D
Spandau	.. Stendal	9·59	57·9	57	60·9	D
Potsdam	.. Magdeburg	22·09	71·9	71	60·8	D
Berlin (Zoo)	.. Hannover	15·58	157·8	156	60·7	FD
Osnabrück	.. Hannover	12·14	82·6	82	60·4	FD
Hamm	.. Hannover	18·47	109·6	109	60·3	FD
Stendal	.. Hannover	0·04	93·5	93	60·3	D
Güben	.. Frankfort Oder	8·28	30·0	30	60·0	D

† Flying Hamburger railcar.

Egyptian State Railways High Speed Trial Run

(*See paragraph on page* 964)



The test train, weighing 202 tons, behind the tender of standard 4-4-2 locomotive No. 56, "King Fuad I," leaving Cairo for Sidi-Gabir, 120 miles, covered in 119½ min., in spite of numerous delays en route

NOTES AND NEWS

L.M.S.R. Bill.—The London Midland & Scottish Railway Bill was read a third time and passed in the House of Commons on May 29. It has still to go through the House of Lords.

L.N.E.R. Cart Horses Win Awards.—Six L.N.E.R. carters entered for the Whitsun Monday London cart horse parade at Regent's Park, and each one was successful in obtaining a first-class award. In addition three were awarded long-service prizes.

Italian Underground Line.—The municipal authorities of Genoa are understood to be considering the question of constructing an underground electric railway between Genoa Sestri on the west and Nervi on the east, a distance of approximately 12 miles.

Third Class German Sleepers for Parties.—Third class sleeping cars can now be reserved on the German State Railway for parties of not less than 28 travellers, or if that number of tickets is purchased. The fare reduction granted for parties applies also to the sleeper tickets. The minimum number of travellers required for reserving second class sleepers under the reduced terms has been lowered from 20 to 16 persons.

A World's Record Run.—It is reported in *The Times* that in its journey to the Chicago World Fair, where it is to be exhibited during the summer, the diesel-electric train, the Burlington Zephyr, ran from Denver to Halsted station in Chicago, a distance of 1,015 miles, without a stop. The time was checked to 13 hr. 5 min. 44 sec., giving an average of 77·6 m.p.h., and it is claimed that a maximum rate of 112·5 m.p.h. was maintained for 3 miles. Over the 401 miles separating Denver and Harvard, Nebraska, the speed was 79·1 m.p.h. The Burlington Zephyr was described in the *Diesel Railway Traction Supplement* for May 18.

A New High-power Lathe.—One of the most powerful lathes ever constructed in Great Britain has recently been erected in the reorganised Vickers' works of the English Steel Corporation Limited, with the purpose of speeding up the machining of large forgings. The drive to the headstock, which alone weighs about 75 tons, is by a 250 h.p. variable speed motor. For lubrication of the machinery, a motor-driven pump delivers oil through a filter to a tank above the headstock, from which it is fed to all bearings and cascades on to the gears. Interlocking of the push buttons on the control panel makes it impossible for the driving motor to be started before the lubricating system is in operation. Windows in the headstock cover and internal electric illumination provide for rapid inspection while the machine is running. A four-speed gearbox, in conjunction with the variable speed motor, gives a range of spindle speeds of approximately ½ to 30 r.p.m. On its first run the lathe removed 3½ tons of material from an 88-ton boiler drum in an hour, and was working well within its capacity.

Diesel Traction at the Institute of Transport Congress.—Included in the possibilities of the Institute of Transport Congress, which is to be held at Leeds from June 6 to 9, is an opportunity of observing diesel traction under two sets of conditions on the London & North Eastern Railway. As recorded in our *Diesel Railway Traction Supplement* for May 18, the L.N.E.R. has recently purchased two 250 b.h.p. Armstrong-Whitworth diesel railcars, largely as a result of the successful operation of a similar vehicle, the *Tyneside Venturer*, since 1932 in the heavily-graded Yorkshire coast areas. The two new cars are named *Lady Hamilton* and *Northumbrian*, and the former is now in non-stop service between York and Leeds on the standard steam-hauled express timing of 30 min. for the 25 miles. Four trips a day are made from Leeds to York direct, but two of the return journeys are made via Harrogate. Certain trips are also made to Church Fenton and Horsforth. The *Northumbrian* is at work between Hull and Selby. On June 7, the delegates and visitors to the Institute of Transport Congress are to have the opportunity of riding behind what is the largest diesel vehicle in Britain, for the Armstrong-Whitworth 800 b.h.p. 1-Co-1 universal locomotive is scheduled to draw the Congress special train from Leeds to Thirsk and Darlington, and return. Leaving Leeds at 1.25 p.m., Thirsk is to be reached at 2.24, and after a stop of 41 min., the train will go on to Darlington, arriving at 3.30 p.m. The return journey is to be made without intermediate stop, and the train will leave Bank Top station, Darlington, at 5.3 p.m. and arrive in Leeds at 6.22 p.m. At the present time this diesel-electric locomotive is working fast goods trains between Newcastle and York, and makes one trip in each direction daily.

Two Armstrong-Whitworth 250-b.h.p. diesel-electric railcars on the L.N.E.R.

Canadian National Earnings.—Net revenues of the Canadian National Railways for the first four months of 1934 were $1,571,213, compared with a net deficit for the same period last year of $4,158,083. Gross earnings from January 1 to April 30 amounted to $50,813,446, an increase of $9,125,013, and in the operating expenses of $49,242,233 there was an advance of $3,395,717.

Canadian Pacific Earnings.—Gross earnings of the Canadian Pacific Railway for the month of April, 1934, amounted to $9,260,000, an increase of $1,338,000 on April, 1933. In the working expenses of $7,990,000 there was an advance of $606,000, leaving net earnings $732,000 higher, at $1,270,000. For the period January 1 to April 30, 1934, aggregate gross earnings were $36,747,000, an increase of $5,252,000, and the net earnings of $4,496,000 were higher by $2,661,000.

Veteran Locomotive for York Rail Museum.—The 89-year old L.N.W.R. engine *Columbine* is being transferred from Crewe works and placed on exhibition in the L.N.E.R. Museum at York. The *Columbine* was built at Crewe works in 1845, and had a working life of 57 years. From 1845 to 1877 it was on main-line service, and for many years worked the fastest expresses between Crewe and London, Crewe and Carlisle, and Crewe and Holyhead. From 1877 to 1902 the engine was attached to the Engineer's Department and was used to draw the Engineer's inspection coach at Bangor, being named *Engineer Bangor*. In January, 1902, it was withdrawn from active service and preserved at Crewe works as an exhibition engine of early design. In recent years it has been

exhibited both at the British Empire Exhibition, Wembley, in 1925, and at the Liverpool & Manchester Railway Centenary Celebrations in 1930. The *Columbine* has a single pair of driving wheels 6 ft. in diameter and a total weight in working order of 20 tons 8 cwt.

Railway Air Services Limited.—Wing Commander Measures has been appointed Superintendent of Railway Air Services Limited.

New Halt at Llys, G.W.R.—A new halt at Llys, between Gardneddwen halt and Llanuwchllyn, will be opened for traffic on Monday next, June 4.

"London Transport" Lettering for Tube Stock.—Tube rolling stock with the new standard lettering of "London Transport" instead of "Underground" has appeared at the Golders Green depot.

Rhodesia Railways Debentures.—A new agreement has been reached by the representatives of the Governments of Southern and of Northern Rhodesia, and of Bechuanaland, and the Rhodesia Railways, the principal purpose of which is the reduction of the overhead charges of the railways. The agreement is to be cancelled at the end of five years if the railway company has not then converted its debentures so as to effect this reduction. Provisions are inserted in the agreement as to reserve account, rates, stabilisation fund, and dividends.

The Week's Road Accidents.—The Secretary to the Ministry of Transport has issued the following return, for the week ended May 19, of persons killed or injured in road accidents :—

	Killed in accidents reported during the week	Reported during the week as having died as the result of accidents occurring in previous weeks	Injured in accidents reported during the week
	No.	No.	No.
England ...	83	26	4,278
Wales ...	5	—	176
Scotland ...	11	2	362
Great Britain	99	28	4,816

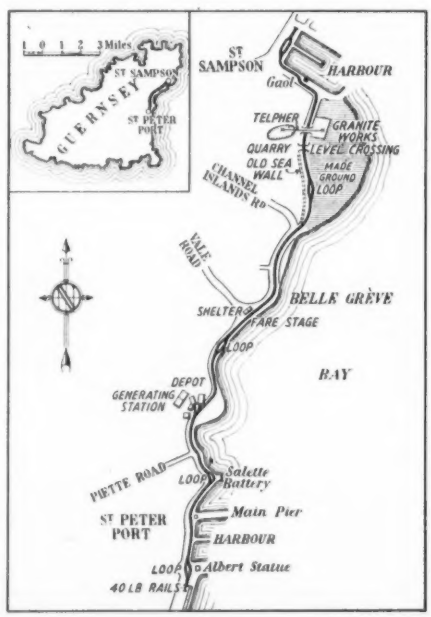
The total fatalities of the week as the result of road accidents were therefore 127, as compared with 128 for the preceding week.

Northern Ireland Traffics.—Statistics of railway traffic and receipts in Northern Ireland for the first two months of 1934, which have been furnished by the Ministry of Commerce, make comparisons with 1932, in view of the abnormal position created by the strike early in 1933. On railways wholly in Northern Ireland, the number of passengers in the two 1934 months was 487,872, against 601,200 in 1932. Receipts from passengers were £25,884, against £28,212, and goods and live stock receipts £31,472, against £44,297, the tonnage of merchandise and minerals being 96,432, against 128,619. On railways partly in Northern Ireland, the number of passengers in the two 1934 months was 497,761, against 729,860 for the first two months of 1932, receipts from passengers being £45,114 against £56,131. Goods and live stock receipts amounted to £92,008, against £132,297, and the tonnage of merchandise and minerals was 157,999, against 203,890.

L.N.E.R. 2-8-2 Express Locomotive.—The new L.N.E.R. 2-8-2 express locomotive for service between Edinburgh and Aberdeen, which is the subject of an illustrated description in another part of this issue, bears the name *Cock o' the North* which was formerly carried by one of the Reid North British Atlantics No. 9903. This locomotive has been renamed *Aberdonian*, No. 9868 of the same class, which was formerly so named, having been withdrawn from service.

C.P.R. New Issue.—The Canadian Pacific Railways $12,000,000 bond issue, which was opened for public subscription on May 30, was over-subscribed the same day. The bonds were offered by a syndicate of financial houses throughout Canada at $97¾. The bonds are convertible on the option of the holder at any time within 7 years on the basis of four common shares for each $100 bond. The issue is of 15-year collateral trust bonds, bearing interest at 4 per cent., and is intended to replace existing 5 per cent. issues.

The Guernsey Railway.—It is reported that service is to be discontinued on the only railway in Guernsey, that between St. Peter Port and St. Sampson. The route of the line, which is practically an electric street tramway, is shown on the accompanying map. The Guernsey Railway Co. Ltd. was incorporated on September 22, 1888, and the railway converted from steam to electric traction in 1891 by Siemens Brothers & Co., and opened in November, 1892, with electric tramcars taking current by trolley poles from an overhead wire. Many interesting features of this railway are described in the June issue of our monthly contemporary, *The Railway Magazine*.



Map of the Guernsey Railway

Diesel Locomotives for India.—Owing to a regrettable error, it was stated in the *Diesel Railway Traction Supplement* for May 18 that the two diesel locomotives built by W. G. Bagnall Limited, of Stafford, for India, were constructed to the inspection and requirements of Messrs. Robt. White & Partners, whereas the Consulting Engineers for the Assam Railways and Trading Co. Ltd. and the Budla Beta tea plantation, to which the locomotives were delivered, are Messrs. Robt. Bruce & Sons, of 153, Moorgate, London, E.C.2.

An Exceptional Load on the L.M.S.R.—Fourteen days will be required to convey each of the 45-ton English Electric rotors for the Galloway power station from Stafford to Castle Douglas, a transport feat which has been undertaken by the L.M.S.R. Owing to the exceptional size of the load, which is 13 ft. 5½ in. wide, the journey can only be undertaken on Sundays, hence the length of time necessary to cover the 220 miles. A halt of a week is necessary at Carnforth, on conclusion of the first stage, before the journey can be completed on the following Sunday.

Summer Train Service Accelerations.—Numerous accelerations of and additions to the British railway train services are to come into operation on July 9. On the Great Western there will be a new train at 9.30 a.m. on Saturdays for Plymouth and Cornwall. Other new Saturday expresses will be 8.50 a.m. to South Devon (first stop Teignmouth); 9.35 a.m. to Minehead and Ilfracombe; 9.40 a.m. Bristol to Exeter, Plymouth and Penzance; 9.0 a.m. Perranporth to Paddington (non-stop from Brent). The Channel Islands boat express will leave at 8.30 a.m. instead of 9.30, as previously, and will give correspondingly earlier arrival times at Guernsey and Jersey. Important new business connections will be afforded from Mondays to Fridays by the following new trains: 9.40 a.m. Paddington to Stroud, Gloucester and Cheltenham; 4.20 p.m. Cheltenham and Gloucester to Paddington; 9.5 a.m. and 3.40 p.m. Birmingham to Gloucester, Newport and Cardiff; 9.10 a.m. and 4.50 p.m. Cardiff to Gloucester and Birmingham; 8.30 a.m. Gloucester to Cardiff; and 4.50 p.m. Cardiff to Gloucester. The outstanding acceleration is the re-timing of the 10.8 a.m. train from Oxford, which will leave Oxford at 10.10 a.m. and be due at Paddington, 63¼ miles, at 11.10 a.m. There will be an extension of the buffet car services, and a number of additional new Sunday trains will be put into operation. On the L.N.E.R. the principal expresses to be accelerated are between King's Cross and Scarborough, King's Cross and Skegness, Liverpool Street and Hunstanton, Liver-

pool Street and Cromer, and those on several cross-country routes. There will be numerous accelerations in Scotland, and additional through trains and connections generally will be provided.

Austrian Railway Electrification.—An association with the object of furthering the electrification of the Austrian Federal Railways has been formed under the presidency of Professor Seefehlner, a former General Manager of the Austrian Federal Railways. The association has set itself the task of popularising the idea of railway electrification in Austria.

International Congress for Steel Development.—An international congress to discuss recent advances in building with steel will be held in London from June 20 to June 23. Papers dealing with the developments that have taken place during the past year will be read at the Institution of Civil Engineers, Great George Street, S.W.1. The subjects include long span bridges, steel bridge design, steel columns with concrete cores, rigid steel frames, and the application of welding to railway rolling stock.

Southern Railway Rebuilt Baltics.—Seven of the Southern Railway Baltic tank locomotives are to be rebuilt with separate tenders, consequent on the forthcoming electrification to Eastbourne, when there will no longer be any suitable service for the Baltic class, owing to their limited water tank capacity. With their separate tenders the rebuilt engines will be comparable with the "King Arthur" class. Under the L.B. & S.C.R., before grouping, three of the Baltics bore names (*Charles C. Macrae*, *Stephenson*, and *Remembrance*). Opportunity will now be taken to name the whole seven as follows:—No. 2327, *Trevithick*; 2328, *Hackworth*; 2329, *Stephenson*; 2330, *Cudworth*; 2331, *Beattie*; 2332, *Stroudley*; and 2333, *Remembrance*.

London Transport Bill.—Consideration of the London Passenger Transport Board Bill was resumed on May 29 by the Select Committee of the House of Commons, presided over by Mr. Annesley Somerville, when further evidence was given for the promoters by Mr. Frank Pick, Vice-Chairman of the board. A further witness for the promoters was Mr. T. E. Thomas, General Manager of the Board's tramways and trolleybuses. Their evidence related to the proposal to make Bedford Square a turning place for trolleybuses using Tottenham Court Road. The Committee, without calling upon counsel for the petitioners, disallowed the proposal to use Bedford Square as a turning place. On Wednesday, Mr. Tyldesley Jones, K.C., counsel for the promoters, undertook that the board would not apply to the Minister of Transport for a turning place off Tottenham Court Road without the consent of the Duke of Bedford and the Trustees of the British Museum. Eventually the Committee sanctioned a trolleybus route down Tottenham Court Road, subject to its not going south of Francis Street.

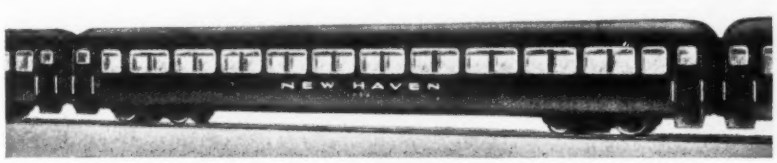
New Coaling Plant for Rugby, L.M.S.R.—A new mechanical coaling plant of the overhead bunker type is under construction at the Rugby motive power depot, L.M.S.R. The installation is part of a general scheme of improvements now being carried out at Rugby and including the provision of an ash-disposal plant and the re-organisation of the track layout to speed up the handling of locomotives starting and finishing shifts. Similar schemes will be completed this year at the L.M.S.R. motive power depots at Longsight (Manchester), Edge Hill (Liverpool), Monument Lane, Aston, Springs Branch, Bescot, Wallsall, and Farnley Junction.

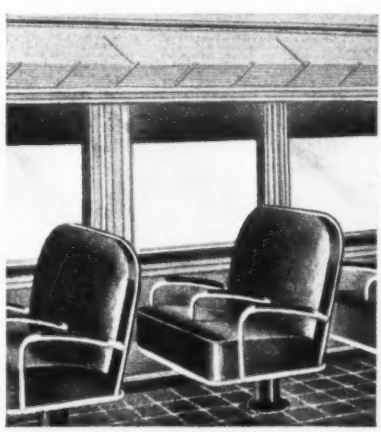
Teaching Enginemen by Films.—The L.N.E.R. is now arranging to exhibit silent cinema pictures of different sections of the line as a useful aid to enginemen in memorising the exact position and purpose of the signals on lines with which they are unfamiliar. Lengths of film are shown slowly, to unfold the whole of the look-out view ahead, over a particularly busy section of line where the signals are many and complicated. The films are taken from the front of a saloon propelled at a speed of 20 m.p.h. over the route actually followed or likely to be followed by the enginemen, and it is intended to project these on screens in the various enginemen's mutual improvement class rooms provided by the company at many of the engine sheds. Non-inflammable sub-standard film is used. The new method is to supplement the present practice, and the strictness of examination of men for driving positions is not relaxed by its introduction.

"Paddington 7000" Goes Automatic.—On Monday last, May 28, the private telephone exchange at Paddington station was switched over from manual to automatic operation. The new exchange, which is believed to be the largest privately-owned automatic exchange in the country, has a capacity for 100 post office lines and 1,000 extension lines serving the various departments. It was described and illustrated in our issue of April 6 last. At first only 75 per cent. capacity is being required to deal with the 13,000 calls now made daily, the remainder being held in reserve for future extensions.

Streamlined Coaches for New Haven Railroad

An interesting application of streamline principles will be seen in the design of fifty new coaches for the New Haven Railroad, to be constructed by the Pullman-Bradley Car Corporation, a subsidiary of Pullman, Inc. It has been found possible to make a substantial reduction in weight as well as in air resistance. A cross-section approaching the tubular has been adopted in order to reduce drag due to the abrupt deflection of air currents. A further departure from the conventional outline of American passenger stock is the elimination of the clerestory roof, made possible by the use of air-conditioning plant in place of older systems of ventilation. The overall height of the cars is thus reduced by 12 in. without encroaching upon the passenger headroom. There are no external mouldings on the sides, and the windows are grouped in pairs and framed in a round-cornered polished aluminium band.





Above, General appearance of new coaches; below, the modern seating

No less careful attention has been paid to the interior appointments with a view to securing the maximum comfort. The seats will be constructed of steel tubing and pivoted. Aluminium luggage racks assist in effecting economy of weight. The lighting system has been designed to project the light downwards in controlled beams, eliminating glare and providing concentrated illumination exactly where it is required.

CONTRACTS AND TENDERS

Suren Piras & Co. has received an order from the Indian Stores Department for 250 16-ton axles, broad-gauge, at Rs. 27,969 c.i.f. Karachi.

Leyland Motors Limited has received an order for Leyland single-decked passenger chassis for the South African Railways and Harbours Board motor services.

Guest, Keen & Nettlefolds Limited has received an order from the United Railways of the Havana and Regla Warehouses Limited for 16,600 steel fish bolts.

Electro Mechanics Limited has received an order from the Indian Stores Department for 5,000 11 ft. 7½ in. by 2 in. steel boiler tubes, at Rs. 21,120 c.i.f. Karachi.

The United Steel Companies (Workington Iron & Steel Branch) has received an order from the Peruvian Corporation for 10,000 steel bearing plates for 70-lb. rails.

The Tilley Lamp Company has received orders from the L.M.S.R. for over 300 lamps of the A.L. 9 pattern for the use of permanent-way men. These are to replace the naphtha flares formerly used.

Henry Williams (India) (1931) Limited has received an order from the Indian Stores Department for 1,000 pairs of broad-gauge disc wheels and axles at a total price of Rs. 4,39,313 f.o.r. Calcutta.

Rate contracts against tender No. M-4295 for roofing materials have been placed by the Indian Stores Department with Plummer Bros. & Co. for Ruberoid roofing, felt, compound and galvanised tacks, super tropical quality; and with Jessop & Co. and Geo. Service & Co. for Rok roofing, felt, compound and tacks.

The Agent, East Indian Railway, has placed orders as follow:—Henry Williams (India) (1931) Limited: 60 sets switches for 90 lb. F.F.R.B.S. rails at Rs. 288 per set and 60 sets of stretcher bars; Hooghly Docking & Engineering Company: 400,000 sets M.S. jaws for cast iron sleepers at Rs. 0-2-4½ each f.o.r. Howrah.

More Sentinels for Peru

The Sentinel Waggon Works Limited has received from the Peruvian Corporation a further order for Sentinel-Cammell steam railcars and locomotives for service on the Central Railway of Peru. The new order comprises one Sentinel-Cammell double-engined steam railbus to seat 82 passengers, second class only, with double entrance doors and one lavatory; one Sentinel-Cammell bogie trailer car to operate with the railbus, having seating accommodation for 20 first and 44 second-class passengers, double entrance doors and two lavatories; and one Sentinel-Cammell double-engined steam rail freight unit having a carrying capacity of 20 tons. Each power vehicle will be equipped with two compound engines and a type 7 Woolnough boiler. Automatic oil firing is incorporated in the design and the vehicles will be suitable for one man control.

Shaw, Wallace & Co. has received an order from the Indian Stores Department for 550 16-ton broad-gauge axles, at Rs. 73,150, 400 broad-gauge 3 ft. 7 in. wheels at Rs. 28,400, and 605 glut rings at Rs. 1,591, free delivery G.I.P. Railway; 420 pairs broad-gauge disc wheels and axles at Rs. 1,81,860 f.o.r. Calcutta; and 400 glut rings at Rs. 890 c.i.f. Karachi.

Heatly & Gresham Limited has received orders from the Indian Stores Department for side buffer recoil springs (flat rate contract at Rs. 0-3-8 free delivery Howrah); 400 tyres for B.G. 3 ft. 7 in. wheels at price of Rs. 24,550 c.i.f. Karachi; 1,000 16 ft. 9 in. by 2¼ in., 1,600 18 ft. 9 in. by 2¼ in. and 150 15 ft. 2⅞ in. by 2¼ in. steel boiler tubes at prices respectively of Rs. 7,057, Rs. 12,625 and Rs. 4,075.

Wright, Pinhorn & Partners Limited has received orders from the Indian Stores Department for 250 16-ton broad-gauge axles at Rs. 28,250 c.i.f. Karachi; 520 pairs disc wheels and axles, broad-gauge, at Rs. 2,28,800 free delivery Burn & Co.'s siding, Ramristopore; 13,300 11 ft. 8 in. by 1¾ in., 214 9 ft. by 2½ in., and 150 18 ft. 9¼ in. by 5½ in. steel tubes, at prices respectively of Rs. 56,178-10-4, Rs. 1,319-10-8, and Rs. 5,833-9-6.

Indian Metre-gauge locomotives

Tenders are invited by the Stores Purchase Committee, Government of Mysore, for two metre-gauge 2-6-2 superheated tank locomotives, through Messrs. Rendel, Palmer & Tritton, 55, Broadway, Westminster, S.W.1. Tenders are receivable by August 6.

Tenders, receivable by June 20, are invited on a rupee basis for the supply to the North Western Railway of India, Lahore, of copper plates for patching locomotive boiler plates. Tenders are also invited on a rupee basis, receivable by June 26, for the supply of copper firebox side and crown plates.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department, Simla, receivable by June 18, for 35,000 sets of buffer recoil springs required for the North Western Railway of India. The following tenders are also invited, receivable on the dates named: For lavatory fittings and spare parts for railway carriages (receivable June 25); for mild steel bolts and nuts for track on the East Indian Railway, including 52,000 fishbolts and nuts (receivable June 27); for electrically-driven pumping plant (receivable June 28); and for 500 carriage and wagon axles, 9,000 bolts, 675 glut rings, and 450 steel tyres for broad-gauge stock, 30 glut rings and eight 3 ft. 7 in. diam. disc wheels for broad-gauge electric motor coaches, 40 disc wheels for 2 ft. 6 in.-gauge coaching and goods stock, three crank axles, three straight axles, and 158 steel tyres for 5 ft. 6 in. gauge locomotives, and 24 steel tyres for 2 ft. 6 in.-gauge locomotives, required for the G.I.P. Railway (receivable July 9).

The Rio Grande do Sul State Railways Administration is calling for tenders, to be presented in Porto Alegro by July 10, for the supply of 10 cold storage wagons to be used for the transport of refrigerated meat. Firms desirous of offering wagons of United Kingdom manufacture can obtain the further details from the Department of Overseas Trade.

Tenders are invited, receivable in the Agent's office, East Indian Railway, 105, Clive Street, Calcutta, by June 19, for the supply of boilers and superheater conversion of 0-6-0 class locomotives and for the supply of cylinders and motion parts for superheater conversion of 0-6-0 and 2-6-4 class locomotives. Tenders are also invited, receivable on June 12, for a total of 412 sets of various types of compound fishplates.

Forthcoming Meetings

June 5 (*Tues*).—**Antofagasta (Chili) & Bolivia Railway Co. Ltd.** (Ordinary General), Winchester House, Old Broad Street, E.C. 2, at 12 noon.

Forthcoming Events

June 2 (*Sat.*).—Permanent Way Institution (Manchester-Liverpool). Visit to Liverpool Overhead Railway. Jubilee Dinner at St. George's Restaurant, 5, Redcross Street, 6.30 p.m.

June 4 (*Mon.*).—Indian State Railways, at Café Monico, Shaftesbury Avenue, London, W.1, for 7.30 p.m. Annual Dinner.

June 6-9.—Institute of Transport, at Leeds. Annual Congress.

June 9 (*Sat.*).—Stephenson Locomotive Society. Visit to Gas Light & Coke Co.'s Works, Beckton.

June 13 (*Wed.*).—Institution of Civil Engineers, Great George Street, London, S.W.1. Conversazione.

June 15-16.—Institution of Railway Signal Engineers, at Cardiff. Summer Meeting.

June 15-18.—Railway Students' Association (London), at Belfast. Annual Convention.

June 15-18.—Railway Students' Association (London), at Belfast. Annual Convention.

June 15-16.—Institution of Railway Signal Engineers, at Cardiff. Summer Meeting.

June 21 (*Thurs.*).—Institution of Electrical Engineers, at Natural History Museum, London, S.W.7. Annual Conversazione.

June 26-29.—Institution of Mechanical Engineers, at Liverpool. Summer Meeting.

PERTH LOCAL TRANSPORT.—On Tuesday (May 29) the Perth Town Council decided by 17 votes to 7, to lease for 21 years the municipal transport undertaking to W. Alexander & Sons Ltd., one of the Scottish Motor Traction group of companies and an associate of the L.M.S.R. and L.N.E.R. W. Alexander & Sons Ltd. will make a capital payment of £22,000 and an annual payment of £1,500 for 21 years.

OFFICIAL NOTICES

Canadian National Railway Company

WELLINGTON GREY & BRUCE RAILWAY COMPANY, 7 PER CENT. BONDS.

NOTICE IS HEREBY GIVEN that the estimated earnings of the Wellington Grey & Bruce Railway for the half-year ending 30th June, 1934, applicable to meet interest on the Bonds, will admit of the payment of £3 14s. 8d. per £100 Bond, and that this payment will be applied as follows, viz.:—

£2 12s. 2d. in final discharge of Coupon No. 103 due 1st January, 1922, and £1 2s. 6d. on account of Coupon No. 104 due 1st July, 1922, and will be made on and after 1st July next at the offices of the Canadian National Railway Company, Orient House, 42/5, New Broad Street, London, England.

The coupons must be left three clear days for examination.

A. H. CONEYBEARE,
European Secretary and Treasurer.

London,
29th May, 1934.

Canadian National Railway Company

WELLINGTON GREY & BRUCE RAILWAY COMPANY, 7 PER CENT. BONDS.

AT the semi-annual ballot for May, 1934, the following Wellington Grey & Bruce Railway Company 7 per cent. Bonds were drawn and will be paid at par at the offices of the Canadian National Railway Company in Montreal, Canada, or at Orient House, 42/5, New Broad Street, London, E.C.2, England, on the 1st July next, that is to say, Bonds numbered:

180,	519,	641,	667,	1261,	1346,	1479,	1778,
1796,	1840,	1877,	2029,	2194,	2276,	2473,	2627,
2706,	2885,	3016,	3034,	3046,	3082,	3099,	3130,
3142,	3318,	3325,	3343,	3490,	3563,	3744,	3885,
4002,	4180,	4243,	4269,	4360,	4425,	4448,	4509,
4524,	4593,	4621,	4694,	4756,	4830,	4918,	5027,
5030,	5287.						

In all £5,000 sterling.

Holders of these Bonds will take notice that the interest will cease after 1st July next.

A. H. CONEYBEARE,
European Secretary and Treasurer.

London,
29th May, 1934.

The Rohilkund & Kumaon Railway Company Limited.

THE Directors are prepared to receive Tenders for the supply of:—

138 PAIRS WHEELS AND AXLES FOR WAGONS,

as per Specification to be seen at the Company's Offices.

Tenders addressed to the undersigned, and envelope marked "Tender for Wheels and Axles," with name of firm tendering, to be lodged not later than noon on the 12th day of June, 1934.

For each Specification a fee of 10s. will be charged which cannot, under any circumstances, be returned.

The Directors do not bind themselves to accept the lowest or any Tender.

By Order of the Board,
W. R. IZAT,
Secretary.

237, Gresham House,
Old Broad Street, London, E.C.2.
24th May, 1934.

London & North Eastern Railway

NOTICE is hereby given that, for the purpose of preparing the Warrants for interest on the Company's 3 per cent. and 4 per cent. Debenture Stocks and 4½ per cent. Sinking Fund Debenture Stock for the half-year ending 30th June, 1934, the balances will be struck as at the close of business on 11th June, and Interest will be payable only to those Stockholders whose names are registered on that date.

Transfers of the above-mentioned Stocks should, therefore, be lodged with the Registrar of the Company at Hamilton Buildings, Liverpool Street Station, London, E.C.2, before 5 p.m. on 11th June.

By Order,
JAMES McLAREN,
Secretary.

Marylebone Station,
London, N.W.1.
1st June, 1934.

The Buenos Ayres Great Southern Railway Company Limited.

THE Directors of the Buenos Ayres Great Southern Railway Co. Ltd. hereby give notice that the Register of Debenture Stockholders will be closed from Wednesday, the 6th June, to Tuesday, the 19th June, 1934, both days inclusive.

By Order of the Board,
R. TRISTRAM HARPER,
Secretary.

River Plate House,
Finsbury Circus, London, E.C.2.
30th May, 1934.

South Indian Railway Company Limited.

THE Directors are prepared to receive Tenders for the supply of:—

MILD STEEL BARS AND SHEETS.

Specifications and Forms of Tender will be available at the Company's Offices, 91, Petty France, Westminster, S.W.1.

Tenders, addressed to the Chairman and Directors of the South Indian Railway Co. Ltd., marked "Tender for Mild Steel Bars and Sheets," with the name of the firm tendering, must be left with the undersigned not later than 12 noon on Friday, the 15th June, 1934.

The Directors do not bind themselves to accept the lowest or any Tender.

A charge, which will not be returned, will be made of 5s. for each copy of the Specification.

A. MUIRHEAD,
Managing Director.

91, Petty France,
Westminster, S.W.1.
30th May, 1934.

OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

RAILWAY AND OTHER REPORTS

Bombay, Baroda & Central India Railway.—The directors will propose, at the general meeting to be held in July next, the payment, in addition to the half-year's guaranteed interest of £1 10s. per cent., of a final dividend for the financial year ended at March 31, 1934, of £1 10s. per cent., making a total payment in July next of £3 per cent., less income tax. The return on the capital stock for the whole year will therefore be £6 per cent., less income tax, the same as for the previous year.

Wellington Grey & Bruce Railway.—The numbers are announced of Wellington, Grey & Bruce Railway Company 7 per cent. bonds, which have been drawn and will be paid at par at the offices of the Canadian National Railway Company in Montreal, Canada, or at Orient House, 42-45, New Broad Street, E.C.2, on July 1 next, when interest thereon will cease. It is also announced that the estimated earnings of the Wellington, Grey & Bruce Railway Company for the half-year ending June 30, 1934, applicable to meet interest on the bonds, will admit of the payment of £3 14s. 8d. per £100 bond, and this payment will be applied as follows: £2 12s. 2d. in final discharge of coupon No. 103, due January 1, 1922, and will be made on and after July 1 next, at the offices of the company in London. Coupons must be left three clear days for examination.

J. Stone & Co. Ltd.—After transferring £45,000 from contingency account and income-tax reserve, being no longer required, a net profit for 1933 is shown of £11,365. The net profit for 1932 was £14,801, after crediting £32,073 net profit on sale of investments and £17,284 from specific reserves no longer required. After providing for the preference dividend (£39,000), the balance forward is reduced from £121,490 to £93,855. The company's export trade is still seriously hampered by exchange restrictions, &c., and it was only towards the end of the year that any improvement in general trade was experienced.

Southdown Motor Services Limited.—This company, which is jointly controlled by the Southern Railway Company and Tilling & British Automobile Traction Limited, secured in the year ended March 31, 1934, a gross revenue of £808,552. After deducting £413,982 for operating and maintenance expenses, £123,943 for Roads Act duties, rates and taxes, £44,949 for administration and general expenses, £120,570 for depreciation, £8,000 for debenture interest and redemption, and other items chargeable against revenue, there remains a profit of £81,158, to which must be added £20,543 brought forward, making a total of £101,701. Out of this amount it is proposed to place £10,000 to reserve, to pay a dividend of 10 per cent. and a bonus of 5 per cent. (£67,500), carrying forward £24,201.

Chloride Electrical Storage Co. Ltd.—The accounts for the year ended March 31, 1934, show a profit of £244,910. After charging depreciation and directors' fees, and providing £15,000 for income tax, the net profit is £214,313. This compares with £139,329 for 1932-33, after providing £17,500 for income tax. The sum of £839 (against £2,360) has been written off investment account in respect of a subsidiary's loss. The directors propose to pay a final dividend of 5 per cent. on the ordinary shares, making 10 per cent. for the year (against 12 per cent.). They also propose to place £125,000 to general reserve (against nil), and to allocate again £11,000 for the benefit of employees, after which the balance forward will be reduced from £104,129 to £72,191.

British and Irish Railway Traffic Returns

GREAT BRITAIN	Totals for 21st Week			Totals to Date		
	1934	1933	Inc. or Dec.	1934	1933	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,940¾ mls.)						
Passenger-train traffic...	499,000	421,000	+ 78,000	8,574,000	8,284,000	+ 290,000
Merchandise, &c. ...	366,000	424,000	− 58,000	9,272,000	8,509,000	+ 763,000
Coal and coke ...	137,000	185,000	− 48,000	5,170,000	4,922,000	+ 248,000
Goods-train traffic ...	503,000	609,000	− 106,000	14,442,000	13,431,000	+ 1,011,000
Total receipts	1,002,000	1,030,000	− 28,000	23,016,000	21,715,000	+ 1,301,000
L.N.E.R. (6,339 mls.)						
Passenger-train traffic...	322,000	269,000	+ 53,000	5,520,000	5,374,000	+ 146,000
Merchandise, &c. ...	281,000	287,000	− 6,000	6,567,000	5,845,000	+ 722,000
Coal and coke ...	152,000	183,000	− 31,000	4,987,000	4,500,000	+ 487,000
Goods-train traffic ...	433,000	470,000	− 37,000	11,554,000	10,345,000	+ 1,209,000
Total receipts	755,000	739,000	+ 16,000	17,074,000	15,719,000	+ 1,355,000
G.W.R. (3,750¾ mls.)						
Passenger-train traffic...	198,000	181,000	+ 17,000	3,578,000	3,539,000	+ 39,000
Merchandise, &c. ...	144,000	177,000	− 33,000	3,698,000	3,407,000	+ 291,000
Coal and coke ...	64,000	90,000	− 26,000	2,176,000	2,144,000	+ 32,000
Goods-train traffic ...	208,000	267,000	− 59,000	5,874,000	5,551,000	+ 323,000
Total receipts	406,000	448,000	− 42,000	9,452,000	9,090,000	+ 362,000
S.R. (2,176 mls.)						
Passenger-train traffic...	305,000	270,000	+ 35,000	5,336,000	5,183,000	+ 153,000
Merchandise, &c. ...	58,500	64,500	− 6,000	1,282,000	1,232,500	+ 49,500
Coal and coke ...	20,500	24,500	− 4,000	700,000	646,500	+ 53,500
Goods-train traffic ...	79,000	89,000	− 10,000	1,982,000	1,879,000	+ 103,000
Total receipts	384,000	359,000	+ 25,000	7,318,000	7,062,000	+ 256,000
Liverpool Overhead ... (6½ mls.)	1,386	1,130	+ 256	22,875	22,194	+ 681
Mersey (4½ mls.) ...	4,099	3,743	+ 356	87,509	83,127	+ 4,382
*London Passenger Transport Board ...	571,600	—	—	23,776,600	—	—
IRELAND						
Belfast & C.D. pass. (80 mls.)	2,138	2,237	− 99	39,073	40,013	− 940
,, ,, goods	489	468	+ 21	11,269	11,180	+ 89
,, ,, total	2,627	2,705	− 78	50,342	51,193	− 851
Great Northern pass. (562 mls.)	9,000	7,350	+ 1,650	159,650	89,500	+ 70,150
,, ,, goods	7,350	8,950	− 1,600	172,850	99,450	+ 73,400
,, ,, total	16,350	16,300	+ 50	332,500	188,950	+ 143,550
Great Southern pass. (2,168 mls.)	23,879	19,344	+ 4,535	413,620	397,688	+ 15,932
,, ,, goods	30,454	28,816	+ 1,638	679,063	650,057	+ 29,006
,, ,, total	54,333	48,160	+ 6,173	1,092,683	1,047,745	+ 44,938

Whit Monday, 1934. * 47th Week.

Quicker Travel to Northern Ireland.—The L.M.S.R. is introducing to-day (June 1) accelerations both in the day services between England, Scotland and Northern Ireland via Stranraer-Larne and in the principal train services of the Northern Counties Committee section. Through carriages for Stranraer will be run on the 10 a.m. Royal Scot from Euston, the arrival at Belfast by this service being 9.50 p.m., or 20 minutes earlier than last summer. From Belfast the service will leave at 9.37 a.m. instead of 9.10 a.m., and the arrival in London will be 32 minutes earlier than last summer. From Glasgow to Belfast the corresponding acceleration will be 27 minutes, and in the reverse direction 30 minutes. In Northern Ireland many improvements will be made to the N.C.C. services as a result of the recent opening of the Greenisland loop line and other operating developments. Up to 25 minutes saving in journey time will be effected by the principal trains between Belfast and Portrush, and Belfast and Londonderry, in addition to the speeding-up of the trains which connect with the Larne-Stranraer steamers. A new train, the North Altantic Express, equipped with buffet car will run in each direction daily between Portrush and Belfast, performing the journey in 80 minutes.

Questions in Parliament

Railway Companies and Air Travel

Lieut.-Col. Sir W. Smiles, on May 30, asked the Minister of Transport if he was aware that railway companies were putting pressure on recognised travel agencies to restrict or prevent the sale of the tickets available by small air passenger-carrying companies.

Mr. Stanley: I am aware that under the conditions of their appointment railway ticket agents are precluded from selling tickets for air services without the consent of the railway companies, and that such consent has been refused in the case of certain air services operated in competition with services provided by the railway companies. I see no reason to intervene in the matter.

British and Irish Railway Stocks and Shares

Stocks	Highest 1933	Lowest 1933	Prices May 30, 1934	Rise / Fall
G.W.R.				
Cons. Ord. ...	55½	31	52½	−3
5% Con. Prefce. ...	109¾	69½	112½	—
5% Red.Pref.(1950)	109¼	87½	109½	—
4% Deb.	108 15/16	99¼	108½	—
4½% Deb.... ...	108	100¾	110½	—
4½% Deb.... ...	116	106	117½	—
5% Deb.	128	117¼	128½	—
2½% Deb.... ...	65	60	70½	+1
5% Rt. Charge ...	124	111½	127½	—
5% Cons. Guar. ...	122	103	124½	—
L.M.S.R.				
Ord.	29⅞	12⅛	23	−2
4% Prefce. (1923)	51	17	49½	−5
4% Prefce. ...	72	33¼	78	−2
5% Red. Prf. (1955)	93	47¼	99	—
4% Deb.	103¼	89½	104	—
5% Red.Deb.(1952)	114	105	111½	—
4% Guar.	97¼	68⅜	99½	+½
L.N.E.R.				
5% Pref. Ord. ...	22½	7¾	18	−1¼
Def. Ord.	10¾	4⅛	8⅝	−¾
4% First Prefce. ...	65½	19⅜	66½	−3½
4% Second Prefc .	40½	12¼	33½	−3½
5% Red.Pref.(1955)	83¾	27	88	−1
4% First Guar. ...	94¾	58¼	96	—
4% Second Guar.	89¼	48	91	—
3% Deb.	77	60¼	78	—
4% Deb.	02¾	80	102½	−½
5% Red.Deb.(1947)	112	102½	108½	—
4½% Sinking Fund Red. Deb.	107½	98¾	106½	—
SOUTHERN				
Pref. Ord.... ...	71	27¾	76	−3
Def. Ord.	24⅜	9⅝	24½	−2
5% Prefce. ...	107 11/16	74	111	—
5% Red.Pref.(1964)	107¾	78⅞	111½	—
5% Guar. Prefce.	124¼	102¾	124½	—
5% Red.Guar.Pref. (1957)	115⅝	103½	115½	—
4% Deb.	107½	96¾	107	—
5% Deb.	126½	114¼	126½	—
4% Red. Deb. 1962–67	107¼	100	107½	—
BELFAST & C.D.				
Ord.	6	4	6	—
FORTH BRIDGE				
4% Deb.	99½	95½	101½	—
4% Guar. ...	98½	94	101½	—
G. NORTHERN (IRELAND)				
Ord.	7½	3½	5	—
G. SOUTHERN (IRELAND)				
Ord.	28	16	20	—
Prefce.	24	12⅜	15½	+⅜
Guar.	42	16¾	40	—
Deb.	60	30⅞	63	+3
L.P.T.B.				
4½% "A" ...	117⅞	112	119½	—
5% "A"	127¼	119¼	128½	—
4½% "T.F.A." ...	111¼	106	109½	—
5% "B"	122½	114	123½	—
"C"	86¾	74½	76½	−2
MERSEY				
Ord.	16¼	5	14	−1
4% Perp. Deb. ...	83	63⅞	87½	—
3% Perp. Deb. ...	62	51	65½	—
3% Perp. Prefce....	50⅛	27	53½	—

* ex-dividend.

BRITISH RAILWAY STATISTICS

"The Railway Gazette" monthly table of freight and passenger traffic figures for February, 1934, as compared with the corresponding period in 1933, compiled from the Ministry of Transport Statement No. 171

Description	Great Britain*	Great Western	London & North Eastern	London Midland & Scottish	Southern
PASSENGER TRAIN TRAFFIC—					
Number of passenger journeys (excluding season-ticket holders)	83,653,127	5,949,722	11,836,256	19,315,283	14,031,447
Increase (+) or decrease (−)	+ 5,034,183	+ 324,823	+ 941,360	+ 1,370,150	+ 703,168
Passenger receipts (excluding season-ticket holders)	£2,752,131	£343,432	£531,695	£835,952	£575,198
Increase (+) or decrease (−)	+ £98,256	+ £6,083	+ £20,436	+ £22,482	+ £22,658
Season-ticket receipts	£673,323	£42,050	£118,137	£193,642	£198,337
Increase (+) or decrease (−)	+ £2,031	£1,660	− £6,281	− £4,423	+ £5,448
Parcels and miscellaneous traffic receipts (excluding parcels post)	£941,026	£168,660	£281,067	£353,464	£110,726
Increase (+) or decrease (−)	+ £57,591	+ £7,682	+ £13,625	+ £26,429	+ £3,803
FREIGHT TRAIN TRAFFIC—					
Freight traffic (tons) (excluding free-hauled)	22 572,117	5,357,064	10,230,977	10,516,962	1,506,134
Increase (+) or decrease (−)	+ 2,223,997	+ 558,434	+ 1,224,183	+ 730,110	+ 165,616
Net ton-miles (excluding free-hauled)	1,270,470,820	231,958,000	432,496,377	510,380,007	59,804,427
Increase (+) or decrease (−)	+ 136,103,702	+ 27,375,019	+ 56,639,231	+ 41,234,234	+ 6,650,660
Average length of haul (miles) (excluding free-hauled)	56·28	43·30	42·27	48·53	39·71
Increase (+) or decrease (−)	+ 0·53	+ 0·66	+ 0·54	+ 0·59	+ 0·06
Freight traffic receipts—	£6,996,366	£1,164,000	£2,293,182	£2,902,000	£413,461
Increase (+) or decrease (−)	+ £643,295	+ £119,000	+ £250,182	+ £220,000	+ £37,761
Receipts per ton-mile	1·322d.	1·20d.	1·27d.	1·37d.	1·66d.
Increase (+) or decrease (−)	− 0·022d.	− 0·02d.	− 0·03d.	− 0·01d.	− 0·04d.
Freight train-loads—					
Average train-load (tons)	130·79	138·23	137·93	126·84	109·34
Increase (+) or decrease (−)	+ 5·25	+ 9·11	+ 5·56	+ 2·91	+ 5·89
Net ton-miles—					
Per train engine-hour	974·37	1,068·27	1,036·80	926·45	802·18
Increase (+) or decrease (−)	18·95	+ 42·22	+ 7·61	− 60·38	− 27·16
Per shunting-hour	864·70	804·74	964·18	878·53	573·76
Per total engine-hour	458·13	458·98	499·59	450·93	334·50
Net ton-miles per route-mile per working day	2,777	2,720	3,001	3,226	1,247
Increase (+) or decrease (−)	+ 291	+ 322	+ 381	+ 250	− 146
Wagon-miles. Total	361,113,875	63,388,815	125,659,744	151,492,871	18,350,939
Increase (+) or decrease (−)	+ 33,869,762	+ 5,404,655	+ 15,537,886	+ 10,992,360	+ 1,692,607
Percentage of loaded to total	65·86	67·61	63·34	67·39	64·89
Wagons per train—					
Total	35·07	35·09	35·80	35·04	32·14
Increase (+) or decrease (−)	+ 1·02	− 1·12	+ 1·17	+ 0·85	+ 1·01
Loaded	23·10	23·72	22·67	23·61	20·85
Empty	11·97	11·37	13·13	11·43	11·29
Train-miles. Coaching—					
Per train-hour	14·96	13·74	14·03	14·43	17·51
Per engine-hour	12·00	10·98	10·97	10·99	14·33
Train-miles. Freight—					
Per train-hour	8·73	9·29	8·78	8·46	9·05
Per engine-hour	3·50	3·33	3·67	3·55	3·01
Engine miles. Total	44,533,690	6,983,635	12,326,910	16,451,426	5,884,485
Increase (+) or decrease (−)	+ 1,891,552	+ 260,176	+ 683,961	+ 746,411	+ 148,310
Mileage run by engines. Total train-miles—					
Coaching	21,465,240	2,913,547	4,912,637	6,789,237	4,194,789
Freight	10,295,641	1,806,312	3,510,437	4,322,894	570,955
Engine-hours in traffic. Total	4,934,567	834,008	1,474,466	1,924,787	502,176
Increase (+) or decrease (−)	+ 303,484	+ 36,562	+ 100,711	+ 138,025	+ 26,070
Shunting miles per 100 train-miles—					
Coaching	7·59	6·96	6·52	8·57	8·04
Freight	75·64	85·82	70·29	71·79	100·35

* All standard-gauge railways

Passenger Traffic Statistics: Number of Journeys, Receipts, and Receipts per Journey (excluding Season-Ticket Holders)—February, 1934

Subject	Great Britain	Great Western	London & North Eastern	London Midland & Scottish	Southern	Cheshire Lines Committee	Liverpool Overhead	London Passenger Transport Board†	Mersey
Full fares—									
Passenger journeys	27,476,768	592,112	986,868	1,401,327	2,230,481	19,520	132,049	21,342,332	83,696
Gross receipts	£694,178	£54,926	£88,982	£98,153	£141,055	£2,530	£1,418	£293,094	£1,425
Receipts per passenger journey	6·06d.	22·26d.	21·64d.	16·81d.	15·18d.	31·11d.	2·58d.	3·30d.	4·09d.
Reduced fares—									
Excursion and week-end—									
Passenger journeys	30,167,597	3,293,029	6,947,318	10,636,115	6,569,201	333,998	97,862	875,227	562,048
Gross receipts	£1,542,287	£237,085	£346,915	£572,980	£316,209	£18,300	£741	£18,675	£8,229
Receipts per passenger journey	12·27d.	17·28d.	11·98d.	12·93d.	11·55d.	13·15d.	1·82d.	5·12d.	3·51d.
Workmen—									
Passenger journeys	23,057,040	1,727,660	3,095,863	6,403,327	4,708,902	220,390	189,494	5,705,050	184,480
Gross receipts	£330,759	£25,268	£49,197	£100,626	£76,731	£3,733	£1,556	£62,289	£1,648
Receipts per passenger journey	3·44d.	3·51d.	3·81d.	3·77d.	3·91d.	4·07d.	1·97d.	2·62d.	2·14d.
Other descriptions—									
Passenger journeys	2,950,584	336,921	805,905	873,886	522,667	34,552	320	308,330	10,412
Gross receipts	£183,515	£26,153	£46,075	£63,504	£41,035	£2,429	£1	£2,502	£132
Receipts per passenger journey	14·93d.	18·63d.	13·72d.	17·44d.	18·84d.	16·87d.	0·75d.	1·95d.	3·04d.
Total—									
Passenger journeys	83,653,127	5,949,722	11,836,256	19,315,283	14,031,447	608,468	419,725	28,230,939	840,636
Gross receipts	£2,752,131	£343,432	£531,695	£835,952	£575,198	£26,998	£3,716	£376,560	£11,434
Receipts per passenger journey	7·90d.	13·85d.	10·78d.	10·39d.	9·84d.	10·65d.	2·12d.	3·20d.	3·26d.

† Includes passengers originating on the railway undertakings, and on the Whitechapel and Bow Joint Railway

Railway Share Market

The stock and share markets tend to show some decrease in activity. This usually reveals itself in professional speculative operations about the end of May. There is an old saying in the Stock Exchange that one should close one's commitments before Derby Day owing to the tendency for markets to commence their spell of summer inactivity at that time. Like many other market practices this investment policy is to be accepted with reserve.

As far as Home railway stocks are concerned, two important influences are expected to be uppermost during the next few months. One is the question of the wages claim, the other the holiday traffic returns. It is possible that uncertainty regarding the former may counterbalance any benefits arising from the latter. The outlook is not regarded pessimistically, and if bearish views emanate from some quarters it is possible these may have relation to the state of some jobbers' books. Given a reasonably fine summer the Southern preferred ordinary and deferred ordinary stocks are expected to show some appreciation. The L.M.S. 1923 preference stock is considered to be undervalued on the estimate that the company is now earning the full dividend on the stock and the L.N.E.R. second preference stock is looked upon as priced very modestly on the estimate that 2 per cent. is now being earned on the stock. These market estimates are necessarily subject to constant revision, and any investor in home railway stocks would do well to take the long view rather than count definitely upon early appreciation in value. A weak spot this week was London Transport "C" stock which was sold on the commencement of the hearing of the claim of Thomas Tilling Limited for compensation for the acquisition of its Metropolitan bus service. It may be observed that the shares of Thomas Tilling were also marked down, so that little significance probably attaches to the movement in the London Transport Board's "C" stock. Mersey issues were reactionary after their recent steady rise, and the preference stock changed hands on the basis of a yield of $5\frac{5}{8}$ per cent.

In foreign railway stocks the most interesting movement was in Argentine railway stocks, which advanced on the impression that the new Argentine Government loan may have the effect of easing the exchange situation to the benefit of the railway companies. North Western of Uruguay 6 per cent. first and second debenture stocks were marked up $2\frac{1}{2}$ and $1\frac{1}{3}$ points respectively on the deduction of the dividends. Nitrate Railway shares were lower and Taltal and Antofagasta were offered. Canadian Pacific shares advanced a little on the recovery in New York, the movement being helped by the April earnings statement and the new bond issue.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1933–34	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1933	No. of Week	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1933	Prices: Lowest 1933	Prices: May 30, 1934	Prices: Yield % (See Note)
South & Central America.	Autofagasta (Chili) & Bolivia	830	27.5.34	£ 10,460	+ £ 2,510	21	£ 267,730	£ 200,680	+ £ 67,050	Ord. Stk.	26	$11\frac{3}{4}$	22	Nil
	Argentine North Eastern	753	26.5.34	12,600	+ 1,000	47	491,100	506,400	− 15,300	,,	$14\frac{1}{2}$	5	8	Nil
	Argentine Transandine	111	—	—	—	—	—	—	—	A. Deb.	55	40	50	8
	Bolivar	170	Apl., 1934	6,400	− 550	17	27,050	30,800	− 3,750	6 p.c. Db.	10	5	10	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	15	11	13	$3\frac{7}{8}$
	Buenos Ayres & Pacific	2,806	26.5.34	129,000	+ 23,000	47	5,241,000	5,242,000	− 1,000	Ord. Stk.	26	$97\frac{16}{16}$	12	Nil
	Buenos Ayres Central	190	13.5.34	$107,000	− $11,000	46	$4,899,953	$4,782,339	+ $117,614	Mt. Db.	30	10	22	Nil
	Buenos Ayres Gt. Southern	5,085	26.5.34	168,000	− 20,000	47	9,486,000	9,647,000	− 161,000	Ord. Stk.	$44\frac{1}{2}$	$21\frac{1}{2}$	$27\frac{1}{2}$	Nil
	Buenos Ayres Western	1,926	26.5.34	64,000	− 6,000	47	3,209,000	3,217,000	− 8,000	,,	$34\frac{1}{2}$	$15\frac{5}{4}$	$21\frac{1}{2}$	Nil
	Central Argentine	3,700	26.5.34	‡193,000	+ 41,000	47	7,923,000	8,499,000	− 576,000	,,	$28\frac{1}{2}$	15	19	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	18	10	10	Nil
	Cent. Uruguay of M. Video	273	26.5.34	16,181	+ 2,444	47	771,581	711,469	+ 60,112	Ord. Stk.	20	8	14	Nil
	Do. Eastern Extn.	311	26.5.34	3,500	+ 300	47	160,436	153,874	+ 6,562	—	—	—	—	—
	Do. Northern Extn.	185	26.5.34	2,601	+ 582	47	90,439	92,258	− 1,819	—	—	—	—	—
	Do. Western Extn.	211	26.5.34	1,327	+ 194	47	73,667	61,799	+ 11,868	—	—	—	—	—
	Cordoba Central	1,218	26.5.34	39,000	+ 4,000	47	1,914,000	1,875,000	+ 39,000	Ord. Inc.	$9\frac{1}{4}$	$2\frac{1}{2}$	5	Nil
	Costa Rica	188	Mar., 1934	20,747	+ 11	39	166,460	178,636	− 12,176	Stk.	29	20	$26\frac{1}{2}$	$7\frac{8}{16}$
	Dorada	70	Apl., 1934	9,600	+ 2,800	17	41,100	26,400	+ 14,700	1 Mt. Db.	$76\frac{1}{2}$	$68\frac{5}{4}$	95	$6\frac{5}{16}$
	Entre Rios	810	26.5.34	13,600	− 500	47	722,400	699,800	+ 22,600	Ord. Stk.	$26\frac{1}{2}$	9	$15\frac{1}{2}$	Nil
	Great Western of Brazil	1,082	26.5.34	5,900	+ 200	21	179,300	243,900	− 64,600	Ord. Sh.	23/6	$\frac{1}{2}$	$\frac{5}{8}$	Nil
	International of Cl. Amer.	794	Mar., 1934	$552,711	+ $61,146	13	$1,523,085	$1,356,820	+ $166 265	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	$\frac{1}{2}$	$\frac{1}{16}$	$\frac{1}{2}$	Nil
	La Guaira & Caracas	225_4	Apl., 1934	3,965	− 1,910	17	15,245	27,240	− 11,995	Stk.	16	10	$8\frac{1}{2}$	Nil
	Leopoldina	1,918	26.5.34	17,536	− 427	21	451,171	484,604	− 33,433	Ord. Stk.	$20\frac{1}{4}$	10	10	Nil
	Mexican	483	21.5.34	$222,000	+ $20,500	20	$4,649,500	$3,731,200	+ $918,300	,,	3	$\frac{1}{2}$	$2\frac{1}{2}$	Nil
	Midland of Uruguay	319	Apl., 1934	7,592	− 713	43	95,108	85,366	+ 9,742	Ord. Stk.	2	1	$1\frac{1}{2}$	Nil
	Nitrate	411	15.5.34	10,405	+ 2,709	19	115,388	42,336	+ 73.052	Ord. Sh.	78/6	$11\frac{16}{16}$	$27\frac{8}{8}$	Nil
	Paraguay Central	274	26.5.34	4,790	+ 100	47	162,180	135,970	+ 26.210	Pr. Li. Stk.	72	$49\frac{1}{2}$	72	$8\frac{5}{16}$
	Peruvian Corporation	1,059	Apl., 1934	49,967	+ 6,193	43	556,896	529,310	+ 27,586	Pref.	$15\frac{1}{4}$	5	$11\frac{1}{2}$	Nil
	Salvador	100	19 5.34	1,543	− 147	47	70.512	130,744	− 60,232	Pr. Li. Db.	70	$66\frac{1}{2}$	70	$7\frac{8}{8}$
	San Paulo	$153\frac{1}{2}$	20.5.34	30,393	− 12,016	20	604,126	606,381	− 2,255	Ord. Stk.	102	68	$80\frac{5}{8}$	5
	Taltal	164	Apl., 1934	4,155	+ 1,965	43	60,935	36,175	+ 24,760	Ord. Sh.	$15\frac{4}{4}$	$5\frac{4}{4}$	$11\frac{5}{16}$	$5\frac{1}{2}$
	United of Havana	1,365	26.5.34	15,289	+ 1,339	47	907,579	904,016	+ 3,563	Ord. Stk.	8	2	5	Nil
	Uruguay Northern	73	Apl., 1934	961	+ 61	43	11,507	14,593	− 3,086	Deb. Stk.	6	$3\frac{1}{2}$	5	Nil
Canada.	Canadian National	23,748	21.5.34	675,477	+ 98,825	20	12,180,392	9,971,611	+2,208,781	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—4 p.c.	Perp. Dbs.	$60\frac{1}{2}$	38	68	$5\frac{7}{8}$
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	$99\frac{5}{4}$	85	100§	4
	Canadian Pacific	17,018	21.5.34	471,200	+ 83,200	20	8,781,200	7,494,400	+1,286,800	Ord. Stk.	$22\frac{1}{8}$	11	16	Nil
India.†	Assam Bengal	1,329	28.4.34	26,977	+ 4,786	4	115,852	85,249	+ 30,603	Ord. Stk.	79	70	$78\frac{1}{2}$	$3\frac{15}{16}$
	Barsi Light	202	5.5.34	3,487	+ 487	5	15,300	16,133	− 833	Ord. Sh.	$101\frac{5}{4}$	70	$100\frac{1}{2}$	6
	Bengal & North Western	2,113	5.5.34	55,311	+ 2,890	5	261,588	258,866	+ 272	Ord. Stk.	292	240	281	$5\frac{11}{16}$
	Bengal Dooars & Extension	161	5.5.34	2,002	− 228	5	11,131	10,651	+ 480	,,	127	119	125	$5\frac{8}{8}$
	Bengal-Nagpur	3,269	28.4.34	118,425	+ 8,805	4	470,400	413,370	+ 57,030	,,	$97\frac{1}{4}$	$83\frac{1}{2}$	$101\frac{1}{2}$	$3\frac{15}{16}$
	Bombay, Baroda & Cl. India	3,089	19.5.34	182,700	+ 11,925	7	1,181,100	1,171,125	+ 9.975	,,	112	107	$111\frac{1}{2}$	$5\frac{8}{8}$
	Madras & South'n Mahratta	3,230	28 4.34	112,350	− 59	4	466,575	440,748	+ 25,827	,,	127	$114\frac{1}{4}$	$123\frac{2}{8}$	$7\frac{5}{16}$
	Rohilkund & Kumaon	572	5.5.34	11,167	+ 1,722	5	60.146	58,369	+ 1.777	,,	260	225	253	$5\frac{15}{16}$
	South India	2.526	28.4.34	82,748	+ 4,780	4	318,143	308,988	+ 9,160	,,	$119\frac{1}{2}$	112	$117\frac{1}{2}$	$6\frac{13}{16}$
Various.	Beira-Umtali	204	Mar., 1934	49.507	+ 6.256	26	290,974	234,727	+ 56,247	—	—	—	—	—
	Bilbao River & Cantabrian	15	Apl., 1934	1,787	+ 232	17	7,749	5,087	+ 2,662	—	—	—	—	—
	Egyptian Delta	621	10.5.34	5,281	+ 197	6	20,892	21,083	− 191	Prf. Sh.	$15\frac{1}{32}$	$1\frac{3}{4}$	2	Nil
	Great Southern of Spain	104	19.5.34	2,252	+ 258	20	43,908	42,753	+ 1,154	Inc. Deb.	4	3	$3\frac{1}{2}$	Nil
	Kenya & Uganda	1,625	Jan., 1934	34,690	+ 5.462	4	34,690	29,228	+ 5,462	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	53	$33\frac{1}{2}$	$43\frac{1}{2}$	$8\frac{1}{16}$
	Mashonaland	913	Mar., 1934	88,871	+ 21,868	26	530,604	362,535	+ 168,069	1 Mg. Db.	$91\frac{5}{4}$	42	94	$5\frac{5}{16}$
	Midland of W. Australia	277	Feb., 1934	12,965	+ 445	34	108 714	104,268	+ 4,446	Inc. Deb.	89	70	$97\frac{1}{2}$	$4\frac{8}{8}$
	Nigerian	1,903	14.4.34	25,974	− 126	2	56,310	57,009	− 699	—	—	—	—	—
	Rhodesia	1,538	Mar., 1934	154,590	+ 28,180	26	909.844	658,388	+ 251,456	4 p.c. Db.	$98\frac{1}{2}$	$80\frac{5}{4}$	100	4
	South African	13,180	5.5.34	490,052	+ 83,609	5	2,374.812	1,982,071	+ 392.741	—	—	—	—	—
	Victorian	6,172	Feb., 1934	735.677	− 53,515	34	5,849,572	6,175,377	− 325,805	—	—	—	—	—
	Zafra & Huelva	112	Apr., 1934	9,965	− 97	17	44,640	41,459	+ 3,181	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1_{16}.

† Receipts are calculated @ 1s. 6d. to the rupee. ‡ Average rate of exchange for the week:—This year 312_{64}. Last year 412_{564}. § ex dividend.

Notes)